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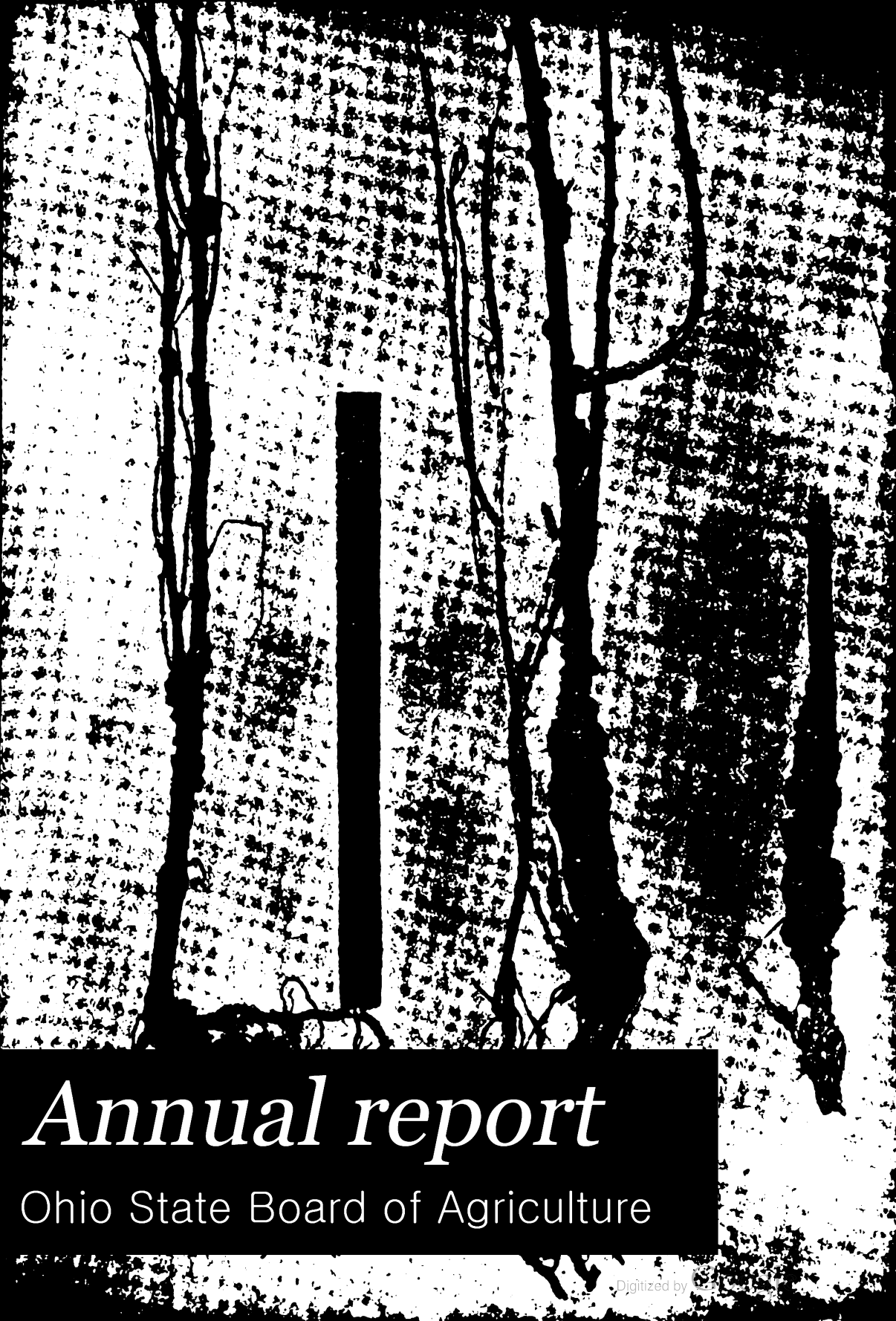
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Annual report

Ohio State Board of Agriculture

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On

Fiftieth Annual Report

OF THE

62809

Ohio State Board of Agriculture

WITH AN ABSTRACT OF THE
PROCEEDINGS OF

The County Agricultural Societies

FOR THE YEAR 1895.

TO THE

General Assembly of the State of Ohio.

COLUMBUS, OHIO:
J. L. TRAUGER, STATE PRINTER.
1896.

ANNUAL REPORT
OF THE
OHIO STATE BOARD OF AGRICULTURE
FOR THE YEAR 1895.

In conformity with the law, the Fiftieth Annual Report of the State Board of Agriculture is herewith submitted to the General Assembly of Ohio. The report contains the business proceedings of the Board for the year, including the report of the Treasurer, giving the general financial condition. The report embraces the proceedings of the Annual State Agricultural Convention and proceedings of the Central Farmers' Institute, held in January, 1896; bulletin of entries and awards at the State Fair of 1895; abstracts of reports from the several county agricultural societies of the State; statistics of the important crops and the live stock of the State; selected papers read at the county farmers' institute meetings held in accordance with law; papers read at meetings of other agricultural bodies, together with such matter as has been deemed of agricultural interest.

The State Horticultural Report and the Report of Weather and Crop Service Division are included as appendices, as provided by law.

The work of the Department and the demands upon it continue to increase. The Annual State Fair and Industrial Exposition is a growing institution, whose influence is marked in the encouragement and betterment of the farm, mechanic and household interests of the State. It is purely educational, seeking to advance and promote ideas by the object lessons presented, and stands at the head of all similar state institutions throughout the country.

The county farmers' institute meetings, held agreeable to law and under the auspices of the Board, are in growing demand. From many points in the several counties of the State are filed the strongest petitions for their establishment, the interest being so great and the institute work so popular that, in addition to those the Board is able to establish and assist within its means, many are organized and conducted as independent institutes, with the hope of regular assignments in succeeding

years. The institutes have been very largely attended and a wide dissemination of practical agricultural knowledge has resulted from their holding.

The inspection and analysis of commercial fertilizers, under the direction of the Secretary of the Board, and in conformity with the fertilizer law of the State, involves a great amount of the most careful labor. Farmers depend greatly upon the reports of analyses and valuations as published by the Department in making selections of brands for their use. The protection afforded by the published chemical analyses is appreciated by the great mass of farmers, as well as by the manufacturers who seek to place upon the markets honest goods, fully up to the claims made for them.

The Department has considerably enlarged its crop and stock reporting service and now issues regular monthly pamphlet reports bearing upon the condition and prospect of crops and live stock. The information is collected and published promptly the early part of each month for the preceding month, and is promptly distributed to farmers and others interested, as well as furnished to the agricultural press and newspapers. These monthly reports are based on estimates received from a corps of some fifteen hundred regular correspondents, and represent every township in the State. As a rule, the correspondents are farmers or men well qualified to judge of crop conditions, and who have no interest except to give facts as they actually exist; hence, their deductions can be taken as reliable.

There is a vast amount of miscellaneous work performed by the Department and a heavy correspondence to conduct. The Department is endeavoring to do good work to stimulate and benefit the great interests it represents, and in aid of this the General Assembly of Ohio has passed wise measures and thereby materially encouraged the work.

Respectfully submitted,

J. W. FLEMING,
Assistant Secretary.

W. W. MILLER,
Secretary.

OFFICERS AND MEMBERS
OF THE
OHIO STATE BOARD OF AGRICULTURE
FOR 1895-96.

OFFICERS AND MEMBERS OF THE BOARD.

OFFICERS AND MEMBERS FOR 1895.

A. J. CLARK, Cambridge, Guernsey County..... *President.*
N. OHMER, Dayton, Montgomery County..... *Vice President.*
F. A. DERTHICK, Mantua, Portage County..... *Treasurer.*
A. H. KLING Marion, Marion County.
J. H. PRINGLE. Cardington, Morrow County.
J. C. BOWER..... Columbus, Franklin County.
J. T. ROBINSON..... Rockaway, Seneca County.
G. LIGGETT..... Watkins, Union County.
C. BORDWELL..... Batavia, Clermont County.
E. C. ELLIS Crestvue, Hamilton County.
W. W. MILLER, Columbus, Franklin County..... *Secretary.*
J. W. FLEMING, Columbus, Franklin County..... *Assistant Secretary.*

EXECUTIVE COMMITTEE.

A. J. CLARK,	J. C. BOWER,
A. H. KLING,	C. BORDWELL,
J. H. PRINGLE.	

FARMERS' INSTITUTE COMMITTEE.

G. LIGGETT,	E. C. ELLIS,
J. T. ROBINSON.	

OFFICERS AND MEMBERS FOR 1896.

J. C. BOWER, Columbus, Franklin County *President.*
J. T. ROBINSON, Rockaway, Seneca County *Vice President.*
A. J. CLARK, Cambridge, Guernsey County *Treasurer.*
G. LIGGETT... .. Watkins, Union County.
A. H. KLING... .. Marion, Marion County.
C. BORDWELL... .. Batavia, Clermont County.
E. C. ELLIS... .. Crestvue, Hamilton County.
L. G. ELY... .. Fayette, Fulton County.
H. S. GRIMES... .. Portsmouth, Scioto County.
ALBERT HALE... .. Mogadore, Summit County.
W. W. MILLER, Columbus, Franklin County *Secretary.*
J. W. FLEMING, Columbus, Franklin County *Assistant Secretary.*

EXECUTIVE COMMITTEE.

J. C. BOWER,	A. J. CLARK,
A. H. KLING,	L. G. ELY,
H. S. GRIMES.	

FARMERS' INSTITUTE COMMITTEE.

J. T. ROBINSON, <i>Chairman,</i>	C. BORDWELL,
ALBERT HALE.	

LIST OF MEMBERS
OF THE
OHIO STATE BOARD OF AGRICULTURE
FROM 1850 TO 1896.

LIST OF MEMBERS OF THE OHIO STATE BOARD OF AGRICULTURE.

FROM THE FIRST STATE FAIR TO THE YEAR 1896.

[Members are elected to serve two years. The Board consists of ten members;
the term of service of five expires annually.]

Name.	Years of service inclusive.	Post-office.
M. L. Sullivant †	1850-53	Columbus.
S. Medary †	1850-53	Columbus.
M. B. Bateham †	1850-51	Painesville.
D. Lapham †	1850-51	Cincinnati.
F. R. Elliott	1850-51	Cleveland.
J. T. Pugsley	1850-51	Convenience.
Arthur Watts †	1850-52	Chillicothe.
J. M. Edwards	1850-52	Youngstown.
C. Springer †	1850-52	Meadow Grove.
J. G. Gest.	1850-54	Xenia.
S. Halloway	1850-51	St. Clairsville.
Allen Trimble †	1850-51	Hillsboro.
William Case †	1852-53	Cleveland.
Philo Adams †	1852-53	Huron.
R. W. Musgrave †	1852-57	Sulphur Springs.
R. W. Steele	1853-56	Dayton.
William H. Ladd	1853-56	Richmond.
D. McIntosh.	1853-54	Shalersville.
J. T. Worthington †	1853-56	Chillicothe.
Joseph Sullivant †	1854-55	Columbus.
John K. Greene	1854-57	Cincinnati.
James L. Cox	1854-55	Zanesville.
B. Stedman †	1854-57	Cleveland.
Alexander Waddle †	1855-60	South Charleston.
Abel Krum	1855-58	Cherry Valley.
Lucian Buttles †	1856-59	Columbus.
G. W. Barker †	1856-57	Marietta.
John M. Millikin †	1857-62	Hamilton.
Luther Smith	1857-58	West Liberty.
Thomas S. Webb	1857-58	Massillon.
Norton S. Townshend †	1858-63	Avon.
L. Q. Rawson	1858-59	Fremont.
James M. Trimble †	1858-61	Hillsboro.
John Reber †	1858-61	Lancaster.
D. E. Gardner	1859-64	Toledo.
William Dewitt	1859-64	Cleveland.
C. W. Potwin	1859-62	Zanesville.
T. C. Jones †	1860-67	Delaware.
Henry B. Perkins	1860-63	Warren.
David Taylor †	1861-66	Columbus.
Jacob Egbert †	1862-63	Lebanon.
Nelson J. Turney †	1862-69	Circleville.
D. McMillan †	1863-70	Xenia.
W. R. Putnam	1863-64	Marietta.
William F. Greer †	1864-67	Painesville.
James Fullington †	1864-69	Irwin Station.

MEMBERS OF THE STATE BOARD OF AGRICULTURE—Continued.

Name.	Years of service inclusive.	Post-office.
William B. McClung.....	1864-71	Troy.
James W. Ross	1865-70	Perrysburg.
R. R. Donnelly †	1865-68	Wooster.
James Buckingham	1865-72	Zanesville.
J. Park Alexander.....	1867-70	Akron.
Norton S. Townshend † †	1868-69	Avon.
William Lang †	1868-71	Tiffin.
D. C. Richmond †	1869-74	Sandusky.
R. P. Cannon	1870-75	Aurora.
James B. Jamison.....	1860-77	Cadiz.
L. G. Delano †	1870-75	Chillicothe.
L. B. Sprague.....	1871-76	Springfield.
Simpson Harmount.....	1871-76	New Philadelphia.
John A. Warder †	1871-76	Cleves.
W. S. Hickox.....	1872-73	Mansfield.
B. W. Carlisle †	1872-79	Hooker's Station.
Justus C. Stephens.....	1873-74	Kenton.
John M. Pugh	1874-79	Columbus.
L. B. Wing.....	1875-80	Newark.
Russell C. Thompson †	1875-76	Sylvania.
Leo. Weltz †	1876-83	Wilmington.
D. L. Pope.....	1876-81	Welshfield.
Charles Smith †	1877-80	Marion.
E. T. Stickney †	1877-78	Republic.
A. E. Stone.....	1877-78	Gallipolis.
Peter Murphy.....	1877-80	Hughes' Station.
W. N. Cowden	1878-83	Quaker City.
R. Baker.....	1879-82	Elyria.
Arvine C. Wales †	1879-82	Massillon.
R. H. Hayman	1880-81	Portsmouth.
O. P. Chaney.....	1880-82	Canal Winchester.
C. D. Bailey.....	1881-88	Gallipolis.
J. C. Levering	1881-86	Leverings.
William S. Foster.....	1881-88	Urbana.
L. B. Harris †	1882-87	Upper Sandusky.
J. H. Brigham	1882-89	Delta.
L. N. Bonham.....	1883-86	Oxford.
H. Talcott †	1883-87	Jefferson.
N. A. Sims.....	1883-83	Columbus.
T. P. Shields.....	1884-87	Watkins.
John Pow.....	1884-89	Salem.
S. H. Hurst.....	1884-89	Chillicothe.
J. J. Sullivan.....	1887-88	Millersburg.
Joseph H. Terrell.....	1887-88	New Vienna.
J. G. Russell.....	1887-90	Mt. Gilead.
H. G. Tryon †	1888-91	Willoughby.
J. M. Black.....	1888-90	Hanover.
A. H. Kling.....	1889	Marion.
H. S. Grimes.....	1889-90	Portsmouth.
A. J. Clark.....	1889	Cambridge.
W. W. Miller.....	1889-94	Castalia.
J. W. Pollock	1890-93	Cedarville.
N. Ohmer.....	1890-95	Dayton.
L. G. Ely.....	1890-91	West Unity.
E. L. Hinman.....	1890-93	Columbus.
J. C. Bower †	1891	Athens.
George Lewis.....	1891-94	Van Wert.
Chester Bordwell.....	1892-93	Batavia.

MEMBERS OF THE STATE BOARD OF AGRICULTURE—Concluded.

Name.	Years of service inclusive.	Post-office.
F. A. Derthick	1892-95	Mantua.
J. T. Robinson	1894	Rockaway.
G. Liggett	1894	Watkins.
J. H. Pringle	1894-95	Cardington.
E. C. Ellis	1895	Crestvue.
Chester Bordwell	1895	Batavia.
L. G. Ely	1896	Fayette.
H. S. Grimes	1896	Portsmouth.
Albert Hale	1896	Mogadore.

† Deceased.

‡ Removed to Columbus.

TABLE SHOWING THE PLACE AND RECEIPTS OF EACH STATE FAIR
HELD; ALSO A LIST OF THE OFFICERS FOR EACH YEAR OR FAIR.

Year.	President.	Treasurer.	Secretary.	Place of Fair.	Receipts.
1850	M. L. Sullivant*	Samuel Medary*	M. B. Batcham*	Cincinnati	\$8,036 18
1851	same	same	W. W. Mather*	Columbus	8,204 08
1852	Arthur Watts*	same	same	Cleveland	13,360 00
1853	Samuel Medary*	M. L. Sullivant*	George Sprague	Dayton	13,996 87
1854	R. W. Musgrave*	Joseph Sullivant*	same	Newark	8,824 58
1855	J. T. Worthington*	same	same	Columbus	9,745 54
1856	William H. Ladd	Lucien Butties*	same	Cleveland	16,684 20
1857	Alexander Waddle*	same	John H. Klippart*	Cincinnati	17,590 75
1858	John M. Millikin*	same	same	Sandusky	9,997 70
1859	N. S. Townshend*	same	same	Zanesville	9,938 83
1860	Alexander Waddle*	Charles T. Potwin	same	Dayton	11,998 50
1861	Darwin E. Gardner	same	same	"	8,036 18
1862	Thomas C. Jones*	David Taylor*	same	Cleveland	11,260 64
1863	N. S. Townshend*	same	same	"	11,142 09
1864	Nelson J. Turney*	same	same	Columbus	12,620 54
1865	same	same	same	"	10,638 65
1866	William B. McClung	same	same	Dayton	14,033 80
1867	Daniel McMillan*	James Buckingham	same	"	18,692 98
1868	James Fullington*	same	same	Toledo	15,606 25
1869	same	same	same	"	19,606 50
1870	James W. Ross	J. Park Alexander	same	Springfield	18,252 25
1871	William Lang	James Buckingham	same	"	16,460 25
1872	James Buckingham	Simpson Harmount	same	Mansfield	19,149 45
1873	Lincoln G. Delano*	same	same	"	22,517 50
1874	same	same	same	Columbus	27,674 79
1875	R. P. Cannon	same	same	"	20,539 30
1876	S. Harmount	J. M. Pugh	same	"	11,909 61
1877	J. B. Jamison	same	same	"	21,151 21
1878	J. M. Pugh	L. B. Wing	same	"	11,979 50
1879	R. W. Carlisle*	same	James W. Fleming	"	30,703 35
1880	L. B. Wing	D. L. Pope	W. I. Chamberlain	"	23,682 20
1881	D. L. Pope	Leo Weltz*	same	"	29,706 16
1882	R. Baker	W. N. Cowden	same	"	34,082 52
1883	W. N. Cowden	L. B. Harris*	same	"	38,513 78
1884	W. S. Foster	same	same	"	33,306 48
1885	C. D. Bailey	J. C. Levering	same	"	29,796 51
1886	L. N. Bonham	L. B. Harris*	same†	"	30,533 17
1887	J. H. Brigham	same	L. N. Bonham	"	30,902 10
1888	John Pow	J. G. Russell	same	Centennial year, no fair	
1889	same	same	same	Columbus	19,637 41
1890	J. G. Russell	A. H. Kling	same	"	27,574 55
1891	J. M. Black	same	same	"	33,578 64
1892	A. H. Kling	W. W. Miller	same	"	30,357 19
1893	J. W. Pollock	same	same	"	19,350 83
1894	W. W. Miller	F. A. Derrthick	same	"	27,260 25
1895	A. J. Clark	same	W. W. Miller	"	33,966 13
1896	J. C. Bower	A. J. Clark	same	"	

* Deceased. † Served six months to July 1, when he resigned and was succeeded by L. N. Bonham.

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TRANSACTIONS
OF THE
OHIO STATE BOARD OF AGRICULTURE
FOR THE YEAR 1895.

DEPARTMENT OF AGRICULTURE,

Columbus, January 17, 1895.

The following gentlemen, comprising the Ohio State Board of Agriculture for 1895, met for organization for the year.

HOLD-OVER MEMBERS.

N. Ohmer, Dayton, Montgomery Co., O.
F. A. Derthick, Mantua, Portage Co., O.
J. T. Robinson, Rockaway, Seneca Co., O.
G. Liggett, Watkins, Union Co., O.
J. H. Pringle, Cardington, Morrow Co., O.

NEWLY-ELECTED MEMBERS.

A. J. Clark, Cambridge, Guernsey Co., O.
A. H. Kling, Marion, Marion Co., O.
J. C. Bower, Columbus, Franklin Co., O.
C. Bordwell, Batavia, Clermont Co., O.
E. C. Ellis, Crestvue, Hamilton Co., O.

Organization was effected by the election by ballot of

A. J. Clark, President.
F. A. Derthick, Treasurer.
W. W. Miller, Secretary.
J. W. Fleming, Assistant Secretary.

The President upon accepting the chair expressed his high appreciation of the honor conferred and the importance of the position, in the duties of which he asked the hearty co-operation of the members, to the

end that the work of the Board may be successful in all the divisions and may inure to the promotion of the agricultural and industrial interests of the state.

Other officers elected, accepted their respective positions in appropriate remarks.

On motion of Mr. Kling, the President was directed to appoint a committee of three to formulate and present at the next meeting a series of by-laws, defining the work and duties of the Board and its officers.

The President appointed as such committee, Messrs. Kling, Pringle and the Secretary.

The Secretaries were authorized to employ the necessary help for the Department.

On motion the Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,

Columbus, February 28, 1895.

The Board met pursuant to call. There were present Messrs. Kling, Derthick, Liggett, Ellis, Robinson, Bordwell, Bower, Pringle, and the President; absent, Mr. Ohmer.

The President called the Board to order, when the minutes of the preceding meeting were read and approved.

The committee appointed at a former meeting to formulate rules defining the power and duties of the Board, submitted the following report, which on motion of Mr. Bordwell was considered *seriatim* and adopted as a whole:

RULES OF THE OHIO STATE BOARD OF AGRICULTURE,

DEFINING ITS ORGANIZATION, POWERS AND DUTIES.

ARTICLE I—MEMBERS.

The Ohio state board of agriculture consists of ten members, five of whom are elected annually for a term of two years, as provided by law.

ARTICLE II—OFFICERS.

The officers of the board shall consist of a president, vice-president, treasurer, secretary and assistant secretary.

ARTICLE III—ORGANIZATION.

Section 1. The members of the board, having been duly qualified by taking the oath of office, shall, within thirty days from the date of the annual election, meet at the agricultural department in the state house at Columbus, Ohio, and elect by ballot, a president, vice-president, treasurer, secretary and assistant secretary, whose terms of office shall be one year, and until their successors are duly elected and qualified. The secretaries may be persons not members of the board.

Sec. 2. The board shall appoint a director and assistant director of the weather and crop service, as required by law.

Sec. 3. The board shall, at this same meeting, unless otherwise agreed, appoint a superintendent of the fair grounds and such office clerks, including a stenographer, as may be necessary, or the appointments shall be by the secretary when so referred, and these appointed employes shall be subject to removal at any time.

ARTICLE IV—COMMITTEES.

There shall be the following standing committees: Executive committee of five members, of which the president shall be one and the chairman thereof. Farmers' institute committee of four members, of which the secretary shall be one. Finance committee of three members, and an auditing committee of three members.

ARTICLE V—DUTIES OF OFFICERS.

PRESIDENT.

Section 1. It shall be the duty of the president to preside at all meetings of the board and at the annual state agricultural convention, for which occasion, he shall prepare and deliver an annual address, embodying a summary of the work of the board during the preceding year; a concise statement of the financial and beneficial results of the state fair, and a brief statement of the general and financial condition of the board and the state fair, together with such other facts, suggestions and recommendations, as are pertinent to the objects and purposes of the convention and the agricultural interests of the state.

The president shall decide all points of order and cast the deciding vote in case of a tie. He shall appoint all standing and special committees, and assign members of the board to take charge of the various departments of the state fair. In case of a vacancy in the membership of the board by reason of death or otherwise, the board shall appoint some suitable person to take charge of the department of the deceased or disabled member during the state fair. The president shall call meetings of the board and of the executive committee, shall approve all bills, and sign all orders on the treasurer and state appropriations. He shall perform such duties as generally devolve upon a presiding officer, and such further duties as may be ordered by the board.

VICE PRESIDENT.

Sec. 2. The vice-president, in the absence of the president, shall perform all the duties pertaining to the office of president.

TREASURER.

Sec. 3. It shall be the duty of the treasurer to take charge of all moneys that may come into his hands by reason of such treasurership, giving his receipt therefor in cases where required, and shall provide for the prompt payment of all warrants

drawn on him and properly signed by the president and secretary. He shall have charge of the admission department at the annual state fair, subject to such regulations as the board may from time to time prescribe, and shall appoint the necessary assistants to conduct the business of his department during the fair.

He shall keep his accounts in a proper manner, showing the amounts and sources of receipts coming into his hands, amounts expended on orders and balances, debit or credit. He shall give a written statement thereof, whenever required by the board or its president. At the last meeting in the year he shall present a full statement of his treasurership, the same to be examined by an auditing committee and read at the annual agricultural convention.

At the close of his term of office he shall deliver to his successor all books and papers in his possession, pertaining to his office, together with the balance cash on hand, if any. Before entering upon the duties of his office he shall give bond in the sum \$25,000 for the faithful performance of his duties, the same to be approved by the board. For his services he shall receive the sum of \$1 per annum.

SECRETARY

Sec. 4. It shall be the duty of the secretary to attend to the general correspondence relating to agriculture, farmers' institutes, commercial fertilizers and the executive business of the department. He shall supervise the collection, collation and publication of stock and crop statistics, subject to such direction as may from time to time be given by the board. He shall take charge and management of the farmers' institutes held in the state according to law and under the direction and auspices of the board, and shall perform the duties of inspector of commercial fertilizers, such as are prescribed by law. He shall edit and supervise the publication of agricultural documents issued by the board, including the agricultural portions of the annual state agricultural report, preparing and selecting for said report such matter as he may consider for the advancement of the general agricultural interests of the state. He shall perform such duties in connection with the Ohio state fair as may be from time to time prescribed by the board.

At each meeting of the board the secretary shall be given opportunity to report the progress of his agricultural work, and recommend for the consideration of the board any new measures that may seem to be for the agricultural interests. At the last meeting in the year he shall report to the board the agricultural situation so far as the work of his office is concerned, and the success or failure of any work that may have been inaugurated, that the board may be able to intelligently map out the work of the department for the next year.

The secretary shall sign all checks and orders on the treasurer and state appropriations, after first being properly signed by the president. He shall perform such other duties as the board may direct, and act in conjunction with the assistant secretary in promoting the business interests of the department and the annual exhibitions.

ASSISTANT SECRETARY.

Sec. 5. It shall be the duty of the assistant secretary to attend to the correspondence relating to the annual exhibitions, the finance and the business of the department. He shall keep an accurate record of the proceedings of all meetings held by the board or its executive committee. He shall keep the records of the financial transactions of the board and take charge of the books, papers and vouchers connected with the accounts, and upon proper bills or orders from the board, write checks and orders in payment of accounts, which checks or orders before payment must be signed by the president and secretary. At the last meeting in the year he shall present to the board for examination and report by its auditing

committee, a written statement of the financial transactions for the year, and the general financial condition of the board, together with the books and papers pertaining to the same. This statement, after being examined and reported on by the auditing committee, shall be read in the annual agricultural convention in connection with the treasurer's report.

He shall attend to the printing, prepare, contract and supervise the newspaper and general advertising for the annual Ohio state fair, such as may be ordered or agreed upon by the board. He shall attend to the general preliminary arrangements for the fair, and see that the several departments are supplied with necessary books and other equipment for the members in charge, the superintendents and awarding judges. He shall prepare all books, blanks, etc., pertaining to the transaction of fair business, and during the fair shall have charge of the entry department and the department of privileges, and may employ, with the concurrence of the secretary, such assistants as may be necessary to the prompt transaction of business. He shall edit the state fair statistical and business portion of the annual agricultural report; shall perform such other duties as the board may from time to time prescribe, and act in conjunction with the secretary in promoting the agricultural and executive work of the department.

EMPLOYES.

Sec. 6. The permanent clerks in the office and superintendent of fair grounds, shall be under the direction of the secretary, and shall perform such duties as may by him be prescribed or directed by the board.

ARTICLE VI—EXECUTIVE COMMITTEE.

The executive committee shall meet at the call of its chairman and act on such matters as do not warrant the calling together of the entire board, and perform such duties and consider such matters as may be referred to it by the board, reporting for confirmation at the next subsequent meeting of the board all decisions rendered and actions taken.

ARTICLE VII—FARMERS' INSTITUTE COMMITTEE.

The farmers' institute committee shall consider petitions for institutes and assign speakers for the institutes held under the law and the auspices of the board.

ARTICLE VIII—AUDITING COMMITTEE.

The auditing committee shall, at the close of each year, or when otherwise ordered, examine the books, checks and vouchers of the board and its officers, and make written report of its findings to the board and to the annual state agricultural convention.

ARTICLE IX—FINANCE COMMITTEE.

The finance committee shall consider such financial affairs of the board as may be referred to it.

ARTICLE X—MEMBERS OF THE BOARD.

Members of the board shall meet pursuant to adjournment, or at the call of the president, and during the annual state fair shall take charge and responsibility of such respective departments as may be assigned to them by the president. Members

shall appoint the necessary superintendents, and conduct the work of their respective departments of the state fair, in accordance with the rules and regulations adopted by the board. Any action taken or decision rendered by a member in the department over which he has charge, shall be final, within the rules, except that an appeal may be taken to the president, and if in his judgment the appeal is well taken, the president shall refer the matter to the board for consideration and settlement. Members shall be entitled to receive pay for all personal expense incurred while attending to duties connected with the state board of agriculture.

ARTICLE XI—LIBRARY.

The library of the board, located in the agricultural department in the state-house, shall at all times during office hours, be accessible to persons desiring to consult its volumes.

Members of the board and its secretaries may draw from the library such volumes as they may desire, the same to be properly charged in a record kept for the purpose and duly credited upon return.

ARTICLE XII—QUORUM.

A majority of the members of the board or committees shall constitute a quorum for the transaction of business.

ARTICLE XIII—ORDER OF BUSINESS.

The order of business for meetings of the board shall be as follows:

1. Call to order by the president.
2. Call of roll.
3. Reading of minutes of last meeting and action on approval.
4. Unfinished business.
5. Reports from executive committee.
6. Reports from standing committees.
7. Reports from special committees.
8. Communications from the president.
9. Communications from the treasurer.
10. Communications from the secretary.
11. Communications from the assistant secretary.
12. Miscellaneous business.

Cushing's manual of rules of order shall govern the parliamentary proceedings of the board and its committees.

These rules may be altered or amended at any meeting of the board, a majority of all the members concurring.

Under the new rules, Mr. Kling nominated Mr. N. Ohmer for the office of Vice-president.

On motion of Mr. Ellis, the Secretary was instructed to cast the ballot of the Board for Mr. Ohmer, whereupon he was declared unanimously elected Vice-president of the Board.

The President announced the following appointments of committees for the year:

EXECUTIVE COMMITTEE.

A. H. Kling, J. C. Bower, C. Bordwell and J. H. Pringle.

FARMERS' INSTITUTE COMMITTEE.

J. T. Robinson, G. Liggett, E. C. Ellis and Secretary W. W. Miller.

FINANCE COMMITTEE.

A. H. Kling, C. Bordwell and N. Ohmer.

AUDITING COMMITTEE.

N. Ohmer, J. C. Bower and J. T. Robinson.

On motion of Mr. Kling, the actual necessary repairs to buildings on fair grounds was referred to the Secretary.

On motion of Mr. Kling, it was agreed that the rules heretofore in force for the regulation of speed track, be continued, and the matter of opening the track for training purposes, referred to the Assistant Secretary.

The Secretary reported that he had received information to the effect that truck and transfer men unloading freight at the fair grounds had been charging exorbitant prices, and recommended that steps be taken to protect exhibitors from any such evil.

On motion the Secretaries were authorized to act in the matter and make such arrangements as shall insure reasonable charges for loading and unloading and for hauling from and to the freight platform on the grounds.

Recess until 1:30 P. M., at which hour the Board re-convened.

On motion of Mr. Kling, the request of the Columbus Central Railway Co., for the privilege of constructing a loop within the fair grounds, near the central entrance gate, was referred to a committee consisting of Messrs. Bower, Kling and the Secretary.

The President announced the following assignment of departments of the State Fair:

First department, horses.....	J. H. Pringle.
Second department, cattle.....	C. Bordwell.
Third department, sheep.....	G. Liggett.
Fourth department, swine.....	E. C. Ellis.
Fifth department, poultry.....	E. C. Ellis.
Sixth department, farm products.....	N. Ohmer.
Seventh department, fruits and flowers.....	N. Ohmer.
Eighth department, machinery.....	J. T. Robinson.
Ninth department, manufacturers' products.....	A. H. Kling.
Tenth department, woman's work.....	J. C. Bower.
Eleventh department, merchandise.....	A. H. Kling.
Twelfth department, fine arts.....	J. C. Bower.

The special committee on electric light submitted the following:

REPORT OF SPECIAL COMMITTEE ON ELECTRIC LIGHT.

Your committee appointed at a former meeting, to consider the feasibility and investigate the cost of establishing an electric plant on the fair grounds, and the conducting of night exhibitions, beg leave to report, that we have given the matter due consideration, having sought such advice and information as might enable us to recommend the best and most economical means and system of lighting the grounds.

We are satisfied that it is feasible to light the grounds, buildings and race track sufficient for night exhibitions and we believe that such exhibitions, with appropriate special attractions, can be made a source of interest to the people and profit to the Board.

We have corresponded with parties interested in constructing electric light plants and invited proposals for a plant to be purchased outright and a plant simply for the year, to be taken out at close of fair, but with an option to purchase, if a success.

The following propositions were submitted, which the committee has carefully considered:

The system of light as proposed by the Fort Wayne Electric Corporation, we believe to be among the best systems of electric lighting known, and we also believe that it would be to the advantage of the Board to accept the proposition as made for furnishing light for the year 1895, with the privilege of purchasing the plant outright, if desired, at the close of the fair of 1895, and we therefore recommend that the proposition of the Fort Wayne Co., of three thousand one hundred and fifty dollars (\$3,150), for lighting the grounds this year, with the privilege of purchasing the plant at an additional cost of five thousand two hundred dollars (\$5,200), making a total of eight thousand three hundred and fifty dollars (\$8,350) for complete ownership, be accepted.

Your committee did not consider proposals for an engine.

Respectfully submitted,

A. J. CLARK,
J. C. BOWER,
J. W. FLEMING,
Committee.

57 EAST STATE ST., Columbus, O., Feb. 18, 1895.

To the State Board of Agriculture, Columbus, O.:

Gentlemen—We hereby submit you the following proposition to furnish you an electric light plant:

Two 80-light 2,000 C. P. "Wood" arc dynamos complete, with base frame, pulleys, automatic regulators, oilers and shifting device.

One marble switch board for four circuits.

Eight lightning arresters.

One ammeter.

One magneto bell.

One hundred and thirty single "Wood" arc lamps.

Eighty-five pole tops.

Eighty-five hanger boards.

Eighty-five hoods.

Forty-six round hanger boards.

One hundred and thirty globes, opal and clear.

Two dynamo belts.

Two line-shaft pulleys.

The necessary labor, wire, poles, pole steps, guy wire, guy stubs, porcelain insulators, and all material necessary to complete the plant in a first class and thorough manner.

The poles used shall be reasonably straight and first class, and shall be thirty feet long, six-inch top, placed five feet in the ground.

The lamps on race track shall be placed about one hundred feet apart alternately on each side of track and on different circuits.

The poles carrying lamps shall have pole steps placed at the proper distance apart from top to bottom, and poles shall be properly painted some suitable color.

The wire used shall be the best triple braided line wire, weather proof and water proof, "O. K." brand.

The insulation throughout shall be the best and subject to the inspection of the inspector of the State Board of Fire Underwriters.

We will erect and complete the plant ready for operation and shall furnish an expert to operate the same during the fair week for the sum of eight thousand three hundred and fifty dollars (\$8,350).

We guarantee our dynamos to be absolutely automatic in regulation from no load to full load and that any part of load may be cut off same without injury to the dynamo. We guarantee the lamps to be simple and to burn steady and give a bright, white light, free from flickering. We also guarantee the appliances used throughout. The plant to be first class and modern in every respect.

If you desire us to erect the plant and put same in operation during the State Fair and remove same after the fair is over at our own expense, we will do so for the sum of three thousand one hundred and fifty dollars (\$3,150); and if you desire to keep the plant, you may do so for the additional sum of five thousand two hundred dollars (\$5,200). Either or both of the above amounts to be paid in cash when the fair is over. We will agree to have the plant ready for operation by August the first, 1895.

We will enter into a contract in detail covering the entire equipment, character of material, etc., and our understanding of same to put the plant in in a first-class manner.

If you desire us to furnish you an engine, we will furnish you a suitable one hundred and fifty horse power automatic engine erected complete and connected to your boiler and belted to dynamos for the sum of one thousand three hundred dollars (\$1,300).

- Trusting to be favored with your esteemed contract,

Respectfully submitted,

FORT WAYNE ELECTRIC CORPORATION.

By THOMAS COOPER.

TOLEDO, O., Feb. 26, 1895.

Ohio State Board of Agriculture, Columbus, O.:

Gentlemen—We can furnish you an electric light plant using 3 50-light arc machines and series arc lamps for the sum of eight thousand nine hundred and nine dollars (\$8,909.00).

For reasons best explained to you personally we do not advocate this form of installation. The arc machine is by far more likely to burn out. Regulating devices are such that one not familiar with the same will be unable to operate the machines properly.

Should you desire to install motors for incandescents you would be compelled to install an additional machine, whereas, with the 500-volt current all this service could be taken from the machines already installed.

From our experience with fairs we think that a decided revenue can be derived from the sale of power to the exhibitors located at some distance from the power station. In a great many places incandescent lights may be wanted after awhile and can be successfully operated from the 500-volt machine.

Should you, however, desire to purchase the series arc apparatus, we would be glad to see your specifications or furnish the specifications ourselves and enter into contract with you for the erection of same.

Very respectfully,

BISSELL & DODGE.

TOLEDO, O., Feb. 26, 1895.

Ohio State Board of Agriculture, Columbus, O.:

Dear Sirs—We propose to install an electric light plant on the Fair Grounds in Columbus, O., according to the accompanying plans and specifications:

Furnish 2 30-k-w dynamos manufactured by the Siemens & Halske Electric Co.

Switch board using Weston instruments and polished knife switches, Graves' make, D. P. & D. C.

Jack shaft with clutch pulleys of a manufacture to be decided later.

Necessary belts, manufactured by the Munson Belting Co.

Wire buildings and grounds for a total of one hundred and fifty arc lamps.

Furnish arc lamps of either of the following makes: Helios, Graves or General Incandescent Arc Lamp Co.

All wire to be O. K. wire manufactured by the Phillips Insulated Wire Co.

Price for above work seven thousand eight hundred and twenty dollars (\$7,820.00).

Furnish 2 50-k-w dynamos and instruments and switches, all to correspond with above, price will be eight thousand six hundred and eighty-eight dollars (\$8,688.00).

Very respectfully,

BISSELL & DODGE.

SPECIFICATIONS FOR AN ELECTRIC LIGHT PLANT FOR THE STATE FAIR GROUNDS, COLUMBUS, O.

The contractor for this work is not to include the erection of building nor the furnishing of engine and boiler.

The dynamos are to be located in power house and he is to get power from the line shaft of engine now up. He is to furnish a jack shaft with one tight pulley, and one clutch pulley for each dynamo he contracts to furnish. He is also to furnish pulley on the line shaft now up and belts to connect the line shaft pulley with jack shaft pulley and clutch pulleys with dynamos. These belts are to be of double thickness and of the best quality.

The clutch pulleys used are to be guaranteed to be first class and of some approved manufacture.

DYNAMOS.

The contractor shall furnish and install two (2) constant potential compound wound dynamos each of either 30 k-w or 50 k-w capacity to operate at 500 volts. Bidder must state the speed and revolutions per minute at which dynamos are to run. The dynamos shall be new and be provided with all the latest improvement of the manufacturer. They are to have sliding bases, self-oiling bearings and be provided with fire-proof rheostats. The dynamos must be guaranteed to operate at full capacity for a period of twelve hours continuously without becoming heated beyond 60 degrees Fahrenheit above the surrounding temperature.

FOUNDATIONS.

Foundations for dynamos shall be made of brick laid in Portland cement and must extend at least three feet below the surface of the ground. Suitable hard wood timbers must be securely bolted to the foundation for dynamos to rest upon.

SWITCHBOARD.

Contractor shall furnish marble panel switchboard and shall mount on the same two ampere meters, one volt meter with volt meter switch, two dynamo switches, two circuit switches, two ground detectors, pilot lamp, necessary bus bar and fuse connections. All switchboard instruments and appliances must be on non-combustible material. Switchboard is to be built eighteen inches from the wall and firmly fixed in position. All connections as far as practicable are to be made at the back of switchboard.

The wires from dynamos to switchboard shall be covered with some standard rubber insulation supported on glass or porcelain insulators.

LIGHTNING ARRESTERS.

Lightning arresters must be put in position on each leg of two outside circuits and in addition to these, four (4) lightning arresters must be placed on outside circuit.

POLE LINE.

The poles shall be of octagon, cedar, twenty-eight or thirty feet in length, with six-inch tops and painted with two coats of paint. They shall be set at least five feet in the ground, well tamped and securely guyed whenever necessary. The portion set in the ground is to be painted with asphaltum.

The cross arms must be of clear, sound pine, painted and bored for one and one-half inch pins.

All cross arms must be braced with galvanized iron braces.

Insulators shall be of glass and of the double petticoat pattern.

Line wire shall be triple-braided weather-proof, and the name of the wire selected shall be given in bid. No wire on the outside of buildings to be smaller than No. 8 B. & S. gauge.

All the lamps on race tracks, main building, wings and woman's building are to be divided up into two circuits in such a manner that alternate lamps are on different circuits.

INSIDE WIRING.

All inside wiring is to be done according to the National Electric Light Association's rules and subject to the approval of the Columbus Fire Underwriters.

ARC LAMPS.

The lamps shall be located as may be directed by the Board. They are to be nominally two thousand c. p., or four hundred and fifty watts each. They are to be complete with automatic cut-out, globe and globe stand, and lamps on the outside of buildings are to be provided with hoods.

Lamps placed on the grounds are to be put on proper poles suspended from hanger boards placed in hood. Lamps in buildings are to be suspended by brackets. Lamps in buildings which cannot be trimmed conveniently from a ladder are to be suspended by one-half inch manilla ropes. Ropes placed so that the lamps may be readily raised and lowered.

Globes furnished for lamps inside of buildings will be opal globes, for outside lamps are to be clear glass. The switching out of several lamps on one circuit must not interfere with the proper operation of other lamps on the same or other circuits.

The name of lamps bid on must be given in proposition and lamps must be guaranteed to burn free from undue hissing and produce a steady light.

Contractors for the plant will be required to operate plant during fair week. Carbons and other material used in running the plant will be furnished by the purchasers.

PROPOSAL FOR ARC LIGHT PLANT.

MARION, O., Feb. 27, 1895.

Ohio State Fair Association:

Gentlemen—We propose to furnish to you the following apparatus and material erected in the hereinafter described manner and put in complete and perfect running order, namely:

- 2 40-Lt. direct current Arc Dynamos, 10 Amp.
- 1 60-Lt. Arc Dynamos (direct current), 10 Amp.
- 1 1.87-K. W. field exciter.
- 2 75-K. W. field exciters.
- 118 Standard direct current arc lamps, 10 Amp., 2,000 C. P.
- 118 Globes for same.
- 1 Hanger board and hood on pole top for each lamp outside of buildings.
- 1 Switchboard suitable for three circuits, to be of slate or marble or other non-combustible material.
- 3 Ammeters (indicate current delivered to lamps).
- 3 Rheostats (to control each machine).
- 3 Circuit-breakers (to open the line).
- 3 Lightning arresters (one for each circuit).
- 1 Hanger-board for each inside lamp.
- All the necessary triple braid line wire, No. 6, needed for (being about 15,000 feet) lamps outside of the buildings.
- All the solid rubber covered wire, No. 6, to run inside of buildings and connect all lamps in same (being some 3,000 feet).
- All the glass insulators for the outside fastenings of wire.

All the large porcelain insulators needed inside.

All the necessary hard rubber tubes to carry wires through walls.

One straight, sound cedar pole for each outside lamp and as many additional as may be necessary to properly support the wire at intervals of not more than 140 feet.

All the cross-arms, brackets, etc., necessary to attach wires to poles.

One continuous foundation of concrete and brick large enough for three machines.

3 Double heavy leather belts as wide as the machine pulleys.

3 Friction clutch pulleys placed on one section of shafting same size as that now carrying your driving pulley.

3 Large and 3 small water-proof dynamo covers.

All of the above machinery and material to be delivered and erected upon the grounds, freight paid, in the following described manner:

ERECTION.

The dynamos to rest on bases or stands upon a foundation of concrete and brick, as above mentioned, the same to be not less than four (4) feet in the ground, or in total depth and as wide and long as may be required for three machines.

All labor of excavation and building foundation as well as the material to be furnished by us. All extra dirt to be removed by you.

Machines to be driven by three heavy double leather belts from three clutch pulleys placed on one section of shafting to take the place of a section of lighter shafting now in position.

Pulleys, belts and shafting furnished by us and placed in position and old shaft removed and to be our property.

You to furnish the necessary enclosure, weather and water-proof, for the dynamos.

The switchboard is to be substantially erected and secured and all the indicating devices furnished placed thereon.

All connections between machines and switchboard instruments to be made with solid rubber-covered wire.

All circuits to be carried out of dynamo room through rubber tubes.

All lamps in buildings to be hung and distributed at such heights as to give the best possible effect and from hanger boards properly secured.

All lamps placed too high to be reached from step ladders to be on ropes and pulleys.

All lamps outside to be placed on hanger boards in weather-proof hoods on top of poles.

All the dynamos and lamps to be of the Westinghouse Electric and Manufacturing Co.'s make, which has no superior. The armatures of the toothed type with machine wound independent, separable and removable coils. The regulation on these machines is the very best and works to perfection from an overload down to a dead short circuit without danger or injury to the machines.

All poles to be extra selected, live, straight and made smooth, to be thirty feet in length, so not less than five feet in the ground and well tamped in. To be given two coats of paint, one before erecting and another after the work of construction is finished, preferably white with butts black.

All poles supporting lamps to be fitted with galvanized iron steps.

All wires shall be safely and rigidly secured on and to poles upon glass insulators and no wires shall touch any trees or buildings except they be insulated therefrom on glass.

All wire outside to be triple braid weather proof. All wire inside to be solid rubber covered and run in strict accordance with the underwriters' rules. All wires passing through wall to be rubber and placed in hard rubber tubes.

It is expressly understood that every article necessary to make this a complete running plant is included in the price named and there is to be no bill for extras whatever, unless changes in the original intents and purposes of the plans are ordered. Immediately upon the completion of the plant it is to be run continuously for four nights as a test, carbons to be furnished by us, you to furnish engineer, fuel and water, and at once upon completion of such a run the plant is to be paid for in full. We agree further to at once take down all outside lamps and carefully store same in some suitable room on the grounds, to remove the belts and cover the machines.

We will, during the week preceding your next fair, re-hang all the lamps and test plant ready for work, fuel, water and engineer furnished by you. During the fair we will furnish competent attendants to attend to the lamps and the dynamos.

It is expressly understood that all of the above work shall be done by and in charge of an experienced man in this class of engineering.

We will do all of the above described work and furnish all the materials set forth, including the tender of our services as above mentioned, for the sum of seventy-three hundred and seventy-seven dollars (\$7,377).

We will furnish as many additional lamps and hanger boards in weather-proof hoods as may be wanted at \$17.50 apiece, providing the same are ordered placed while the work is in progress.

Trusting that this bid may meet your approval and that we may secure your esteemed order, we are

Respectfully,

GEO. E. TURNER & CO.

On motion of Mr. Robinson, the report of electric light committee was received, its recommendations adopted and the committee with the addition of Mr. Kling, continued to close a contract, after first soliciting subscriptions toward the cost, from Columbus Street Railway Companies and others.

On motion of Mr. Bower, the engagement of bands for the ensuing fair, was referred to the Secretaries, cost to be at same rate per band as last year.

On motion of Mr. Kling, it was agreed that the sum of four thousand five hundred dollars (\$4,500) be the limit for state fair advertising, including lithographs, bills and posters.

The matter of special attractions for the coming fair was referred to the Secretaries.

On motion of Mr. Kling, it was agreed that the night exhibitions be continued Tuesday, Wednesday, Thursday and Friday of the Fair, and that no exhibits be removed from place until Saturday A. M., September 7.

On motion of Mr. Kling it was agreed that speed premiums for both day and night races, shall not exceed the sum of five thousand five hundred dollars (\$5,500).

On motion of Mr. Ellis, it was agreed that all china painting exhibits be made in the woman's building.

The Secretary presented a communication from Chapman Bros. requesting separate classes for Galloway and Aberdeen Angus cattle, which communication, with others relating to premiums, was ordered placed on file.

On motion of Mr. Kling, the action of the Secretary in the appointment of Superintendent of Fair grounds was approved.

Adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,

Columbus, April 17th, 1895, 9 o'clock A. M.

The Board met pursuant to call of the President; quorum present. The minutes of the preceding meeting were read and approved.

Mr. Kling submitted the following, which was adopted:

Resolved, That there be an is hereby appropriated the sum of of three thousand and one hundred and fifty dollars (\$3,150), to pay the Ft. Wayne Electric Corporation, for the use of an electric plant on the fair grounds during the State Fair of 1895, the same to be operated for night exhibitions; and also the additional sum of five thousand two hundred dollars (\$5,200), aggregating eight thousand three hundred and fifty dollars (\$8,350), to be applied for the payment in full for such plant, in case the Board shall decide to purchase such plant under the option given in contract.

Mr. Kling submitted the following, which was adopted:

Resolved, That the president and secretary are hereby authorized and directed to sign officially the contract between the Ohio State Board of Agriculture of the first part, and the Ft. Wayne Electric Corporation of the second part, for the construction and use or purchase of an electric plant on the State Fair Grounds.

Mr. Kling submitted the following, which was adopted:

Resolved, That the construction of a building to protect the dynamos and other electrical appliances to be placed on the grounds, be referred to the secretaries with authority to act.

The committee to which was referred the request of the Columbus Central Railway Co. for the privilege of construction of a loop in the fair grounds, near the middle entrance gate, reported that it had not yet been able to give the matter proper consideration, and asked further time in which to report. On motion further time was granted.

The committee to which was referred the improvement of walks in North annex building, reported the condition of the work and the prob-

able cost, from proposals and estimates at hand, to complete the work in concrete, brick or slats. It developed from figures submitted by contractors, that the price for concrete would be greater than was at first anticipated, and the Board proceeded to discuss ways and means for improving the hall, which would be within the means of the treasury, pending which discussion a

Recess until 1 o'clock P. M. was taken, at which hour the Board again met and proceeded with the business before it.

On motion of Mr. Liggett, the committee on walks in North annex was continued, with instructions to investigate further as to the improvement and cost, and to report at the next meeting.

The Secretary reported the repairs that had been made on the grounds and others still necessary, including roofs, for which he suggested experimenting with a material recommended by builders.

On motion of Mr. Bower, Capt. Alex. Keeler was appointed Chief of fair police, Secretaries to advise relative to economy in distribution of men for day and night exhibitions.

On motion of Mr. Liggett, the opening of gates at north and south ends of grand stand and the erection of portable booths in front of each lunch stand under the grand stand, was referred to the Secretaries.

Adjourned to meet at call of President.

DEPARTMENT OF AGRICULTURE,

Columbus, June 11, 1895, 9 o'clock A. M.

The Board met pursuant to the call of the President. On roll-call all members were found to be present except Mr. Ohmer, who arrived after the call.

The Secretary read the minutes of the preceding meeting, which were approved, whereupon a recess was taken to visit the fair grounds.

At 2 o'clock P. M. the Board re-convened in the Department and proceeded with the order of business.

Under the head of unfinished business the Secretary called attention to the unfinished walks in the North annex and other work at the grounds, contemplated by previous action of the Board.

On motion of Mr. Bordwell, it was agreed that for the present year, the walks in North annex be dressed with tan bark.

Mr. Ellis moved that the privilege requested by the Columbus Central Railway Co., for the construction of a loop inside the fair grounds, near the south central entrance gate, be granted, which motion was lost.

On motion of Mr. Kling, the Secretaries were instructed to arrange the south central entrance, to accommodate passengers landed by the Columbus Central Railway Company, and requested said railway company to suitably mechadimize or gravel from the tracks to the entrance ways.

Mr. Pringle moved that no repairs be made at this time to the roofs on fair ground buildings, which motion was lost.

On motion of Mr. Ohmer, the President, Secretary and Mr. Kling were constituted a committee to contract for and on behalf of the Board, for repairing the Bodine roofs on fair ground buildings, and on such conditions and terms of payment as shall best protect the interests of the Board.

The President announced as the next business in order, the selection of awarding judges. The following names were submitted and their appointment confirmed:

HORSES.

- B. I. Jones, Granville, O.—Speed and class.
- B. P. Hord, Marion, O.—Speed and class.
- J. W. Edwards, Waynesville, O.—Speed and class.
- H. S. Grimes, Portsmouth, O.—Speed only.
- E. J. Vaughn, Cardington, O.—Timer.
- O. P. Chaney, Canal Winchester, O.—Timer.
- Chas. Ganson, Urbana, O.—Starter.

CATTLE.

Prof. Plumb, Purdue University, Ind.—For Holsteins, Jerseys and other dairy breeds.

- G. M. Roubush, Newtonville, O.—For Shorthorns.
- G. W. Hiskett, Fulton, O.—For beef breeds other than Shorthorns.

SHEEP.

- J. W. Moore, Washington, O.—Class, fine wools.
- Wm. Staley, Marysville, O.—Sweepstakes—Fine wools.
- W. N. Cowden, Quaker City, O.—Class, long wools and downs.
- Eli Dayton, Welshfield, O.—Sweepstakes—Long wools and downs.

SWINE.

- S. H. Todd, Wakeman, O.
- W. C. Hankinson, Blue Ball, O.—Poland Chinas.
- J. M. Jamison, Roxabell, O.—Berkshires.

POULTRY.

- J. M. Marshall, Middletown, O.
- W. C. Hankinson, Blue Ball, O.
- C. W. McFarland, Iberia, O.

FARM PRODUCTS, FRUITS AND FLOWERS.

Geo. W. Campbell, Delaware, O.—Grapes.
Geo. W. Trowbridge, Crestvue, O.—Apples.
N. H. Albaugh, Tadmire, O.—Peaches, pears and plums.
Nathan Moore, Toledo, O.—Apples.
Frank Pentland, Lockland, O.—Live plants.
B. F. Seitner, Dayton, O.—Cut flowers.
D. L. Pope, Welshfield, O.—Farm products.
F. S. Blake, Marion, O.—Vegetables.
O. S. Brown, Londonderry, O.—Maple products, bees and honey.

WOMAN'S DEPARTMENT.

Mrs. Leota C. Bryant, Springfield, O.
Mrs. Jennie Shuntly, Uhrichsville, O.
Mrs. Dr. Coleman, Columbus, O.
Mrs. Webb, Middleport, O.
Miss Maggie Titus, Langsville, O.
Miss Stella McGrath, Athens, O.

On motion the Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,

Columbus, O., July 16, 1895, 2 o'clock P. M.

The Board met pursuant to call, all members being present. President Clark called the Board to order, when the minutes of the preceding meeting were read and approved.

Mr. Kling remarked, that inasmuch as this meeting had been called more particularly to test the electric light plant constructed on the fair grounds, that he had deemed it advisable to invite an electrical expert to accompany him to the grounds this afternoon, to view the work.

The Secretary, for the committee appointed to contract for repair of Bodine roofs on the fair ground buildings, reported that a proposition was made to the Neil Felt Roofing Co. of Columbus and the Harmon Roofing Co. of Aurora, O., to do the work for sixty cents per square, in manner as proposed to be done by this Company. A compromise was finally agreed upon at sixty-five cents per square, whereupon a contract was prepared and submitted to said Company, a copy of which contract the Secretary read, stating that it had not, as yet, been executed.

On motion of Mr. Ellis, the report was received and the President and Secretary authorized to sign for the Board, the contract prepared.

The Secretary reported that the Columbus Central Railway Co. had been advised that this Board would erect proper entrance ways at the

fair ground terminus of its line, and that agreeable to the order of this Board, said Company was requested to make proper gravel or macadam approaches from its tracks to the entrance gates, which it agreed to do.

The Assistant Secretary reported the progress of advertising work for the State Fair, manner of distribution, etc.

Mr. Bower and the Secretaries were appointed a committee to secure the necessary straw for bedding exhibition animals.

On motion of Mr. Ellis, the Board adjourned to meet at call.

DEPARTMENT OF AGRICULTURE,

Tuesday Evening, July 16, 1895, 8:30 o'clock.

After the adjournment of the meeting of the Board, the members, with a few invited guests, went to the fair grounds to witness a test of the electric light plant.

On return from the grounds, the President, at 11 o'clock P. M., called the Board together to consider some matters that had arisen.

On motion of Mr. Robinson, the Secretaries were authorized to contract with the Ft. Wayne Electric Corporation for lighting the general headquarters building.

The Secretary explained to the Board that the pavilion, directed to be placed over the dynamos, had not been arranged for, because of the fact that it was ascertained that a desirable building would cost from seven hundred dollars (\$700) to eight hundred dollars (\$800), and it was thought, in view of this fact, that for the present, it would be wise to simply construct a platform and protection, and should the electric light plant be satisfactory and finally purchased, that a pavilion could then be erected.

On motion of Mr. Kling, the action of the Secretaries was approved and the erection of a pavilion postponed until further action of the Board, and that for the present there be constructed platform and proper protection around the same.

The Young People's Religious Organizations of Columbus, made application for the loan of five hundred (500) wood seat chairs. The Board was of the opinion that it was not strictly legal to loan fair ground property, and as there was a question about so doing, a motion by Mr. Derthick prevailed, to respectfully decline the request.

Adjourned to meet at the call of the President.

STATE FAIR GROUNDS,

Columbus, Sept. 2, 1895, 1:30 P. M.

Board met pursuant to call of the President. On call of roll by Secretary all members responded except Mr. Robinson. The minutes of the preceding meeting were read and approved.

On motion of Mr. Kling, the Secretary was directed to notify the Superintendent of the Central Hospital for Insane, at Columbus, that patients from that institution, with attendants, would be admitted to the State Fair, without regard to number, on Wednesday, September 4, on the payment of fifty dollars (\$50).

On motion of Mr. Bower, it was agreed that on account of the night exhibitions, it would not be advisable to sell tickets to manufacturers at less than the regular prices, viz., fifty cents for adults and twenty-five cents for children.

Adjourned to meet at call of President.

STATE FAIR GROUNDS,

Tuesday, Sept. 3, 1895, 7:30 P. M.

Board met in the Secretary's office on the fair grounds, to consider general matters pertaining to the fair and meetings of associations on the grounds.

Mr. Bordwell, member in charge of the cattle department, presented the following communication, which after explanation on his part and discussion by the members, was referred back to Mr. Bordwell:

COLUMBUS, O., Sept. 3, 1895.

To the Hon. Members of the State Board of Agriculture:

Gentlemen—We, the undersigned, ask that Wesley Purdum, agent, and Link, Burnham & Bro., produce to your Hon. Secretary, the registry number of their respective animals over one year of age, entered in cattle department, Book 27, as required by Article No. 13, Rules and Regulations Ohio State Fair, by Wednesday noon, or such time as the Board may fix. And in default of such registry number, that they be debarred from competition in show ring for premium.

In justice to Mr. Purdum, agent, and Mr. Burnham & Bro., that the Board take action as soon as practicable.

We would also ask a ruling in case of Wesley Purdum, agent, who is not an owner or a breeder, but has entered as agent in breeders' sweepstakes.

Respectfully,

W. B. SMITH & SON.

On motion the Board adjourned to meet at call.

STATE FAIR GROUNDS,

President's Office, Sept. 6, 1895, 1:30 P. M.

The Board met on call of the President. All members were present and responded to roll-call by the Secretary.

On motion of Mr. Ellis, it was ordered that wagons for the removal of live stock be admitted to the grounds on and after 11 o'clock P. M. this day and that no live stock be permitted to leave the grounds before that time, and it was further ordered that all other exhibits should not be removed before Saturday morning, Sept. 7.

On motion, the Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,

Columbus, Oct. 1, 1895, 9:30 A. M.

The Board met pursuant to call, President Clark in the chair. Members all present, except Mr. Derthick. The minutes of preceding meetings held during State Fair were read and approved.

Protests against awards made at the State Fair, were presented as follows:

By J. H. Miller, of Mexico, Ind., against the award to D. Bradfute & Sons, of Cedarville, O., on Grand Sweepstakes for beef breeds of cattle. The grounds claimed for protest were that one of the judges had been unduly influenced, which grounds were not sustained, and on motion of Mr. Bordwell, it was ordered that the award stand as made by the judges.

By Mrs. W. F. Barr, Miss Minnie Bieber and Mrs. E. G. Taggart, against the awards to Miss N. Charles in the amateur class of plants and flowers. The grounds claimed for this protest were that Miss Charles was a professional and not an amateur grower. Miss Charles in answer to the protest, declared she was not a professional, that she grew plants for her own pleasure and not for sale, as required in the rule for amateurs, which declaration was supported by affidavit. On motion of Mr. Ellis, the protest was not sustained, and premiums ordered paid as awarded.

The Secretary reported the work done on Bodine roofs under the Harmon Roofing Co. contract.

Mr. Robinson offered the following, which was adopted:

WHEREAS, The Ft. Wayne Electric Corporation did not perform fully its agreement in a contract entered into with this Board, the 17th day of April, 1895, for the construction of an electric light plant on the State Fair Grounds at Columbus, for use during the State Fair of 1895, with an option to purchase outright, and

WHEREAS, Said plant as installed is not satisfactory to this Board; therefore,

Resolved, That a committee of three be appointed by the president, to make settlement with said corporation for what may be due under the terms of said contract, and also to negotiate with said corporation or other parties for the construction and purchase of a permanent plant on said grounds, the Board electing not to purchase the plant as now constructed by said Ft. Wayne Electric Corporation.

The President appointed as the committee, Messrs. Robinson, Kling and Secretary Miller.

Mr. Ellis, from the committee on Farmers' Institutes, submitted the following report, which was unanimously adopted:

REPORT OF THE COMMITTEE ON FARMERS' INSTITUTES.

Mr. President—The committee on farmers' institutes respectfully submits the following report for the consideration of the Board:

From a careful estimate made by Secretary W. W. Miller, we find that the funds provided for by law will be sufficient to pay the legitimate expenses of one hundred and fifty-seven institutes. For the purpose of keeping within that limit we have, in connection with Secretary Miller, canvassed the locations and claims of the several localities from which applications for institutes have been made, and the committee recommends that institutes be held at the following places for the coming institute season:

Adams—North Liberty (Cherry Fork P. O.)
Allen—Beaver Dam, Bluffton.
Ashland—Loudonville, Polk.
Ashtabula—Ashtabula, Andover.
Athens—Coolville, Athens.
Auglaize—Buckland, Uniopolis.
Belmont—Barnesville, Colerain.
Brown—Hammersville, Russellville.
Butler—Venice (Ross P. O.), Seven Mile.
Carroll—Carrollton.
Champaign—Westville, Kings Creek.
Clarke—Springfield, Catawba.
Clermont—Batavia, Mt. Carmel.
Clinton—Wilmington, Midland City.
Columbiana—Columbiana, New Lisbon.
Coshocton—Plainfield, Keene.
Crawford—New Washington, Bucyrus.
Cuyahoga—Chagrin Falls, Dover.
Darke—Versailles, Greenville.
Defiance—Defiance, Hicksville.
Delaware—Delaware, Sunbury.
Erie—Berlin Heights, Sandusky.
Fairfield—Greencastle, Amanda.
Fayette—Bloomington.
Franklin—Westerville, Georgesville.
Fulton—Wauseon, Delta.
Gallia—Centenary Church.

Geauga—Burton.
Greene—Xenia, Cedarville.
Guernsey—Cambridge.
Hamilton—Glendale, Harrison.
Hancock—Mt. Blanchard, Benton Ridge.
Hardin—Ada.
Harrison—Freeport, Cadiz.
Henry—Napoleon, Florida.
Highland—Rainsboro, Hillsboro.
Hocking—Logan.
Holmes—Killbuck, Millersburg.
Huron—Greenwich, Townsend Center.
Jefferson—Richmond, Smithfield.
Knox—Centerburg, Danville.
Lake—Painesville.
Lawrence—Labelle.
Licking—Utica, Granville.
Logan—West Mansfield, Bellefontaine.
Lorain—North Amherst, Grafton.
Lucas—Maumee, Richfield Center.
Madison—London.
Mahoning—Canfield, North Jackson.
Marion—Marion, Caledonia.
Medina—Brunswick, Whittlesey.
Meigs—Chester, Dyesville.
Mercer—Mendon, Ft. Recovery.
Miami—Troy, Piqua.
Monroe—Woodsfield.
Montgomery—Vandalia, Miamisburg.
Morgan—Chesterfield.
Morrow—Cardington.
Muskingum—Chandlersville, Frazeyburg.
Noble—Caldwell, Summerfield.
Ottawa—Port Clinton.
Paulding—Antwerp, Oakwood.
Perry—Thornville, Rehoboth.
Pickaway—Ashville, Williamsport.
Pike—Piketon.
Portage—Edinburg, Garrettsville.
Preble—Lewisburg, Camden.
Putnam—Leipsic, Columbus Grove.
Richland—Lucas, Shelby.
Ross—Kingston, Frankfort.
Sandusky—Fremont, Clyde.
Scioto—Haverhill, Harrisonville (Scioto P. O.).
Seneca—Republic, Tiffin.
Shelby—Sidney, Jackson Center.
Stark—Alliance, Navarre.
Summit—Osborn Corners, North Springfield.
Trumbull—North Bloomfield, Vienna.
Tuscarawas—Canal Dover, Gnadenhutten.
Union—Marysville, Richwood.
Van Wert—Ohio City, Van Wert.

Vinton—New Plymouth.
Warren—Lebanon, Waynesville.
Washington—Lower Salem, Watertown.
Wayne—Wooster, Shreve.
Williams—Bryan, Montpelier.
Wood—Bowling Green, Grand Rapids.
Wyandot—Nevada, Upper Sandusky.

The committee has also canvassed the ~~claims and qualifications~~ of a large number of persons who have been engaged in institute work, and from the list has selected a number of men who in the past have ~~proved themselves~~ competent. In addition to these, believing that new blood should be introduced from year to year, the committee has added to the list of speakers a number of persons who, in local work have given such satisfaction as, we believe, will justify the Board in giving them a trial in field work.

The following is a list of speakers recommended by the committee:

Prof. W. R. Lazenby, Columbus.
Prof. W. A. Kellerman, Columbus.
Prof. Thos. F. Hunt, Columbus.
Prof. W. D. Gibbs, Columbus.
C. W. Burkett, Columbus.
President W. O. Thompson, Oxford.
Chas. E. Thorne, Wooster.
W. J. Green, Wooster.
J. Fremont Hickman, Wooster.
Aug. D. Selby, Wooster.
F. M. Webster, Wooster.
Alva Agee, Cheshire.
Col. J. H. Brigham, Delta.
John Begg, Columbus Grove.
Waldo F. Brown, Oxford.
W. I. Chamberlain, Hudson.
F. A. Derthick, Mantua.
S. H. Ellis, Springboro.
E. C. Ellis, Crestvue.
E. E. Elliott, Morning Sun.
W. W. Farnsworth, Waterville.
H. M. Foreman, Waterford.
John Gould, Aurora.
J. F. Greene, Sandusky.
Sherman Hood, Meander.
Gen. S. H. Hurst, Chillicothe.
Dr. Isaac Kagy, Tiffin.
G. E. Lawrence, Marion.
T. C. Laylin, Norwalk.
W. H. Likins, Caledonia.
Theo. F. Longenecker, Dayton.
A. T. McKelvey, St. Clairsville.
J. H. Palm, Lexington.
Geo. E. Scott, Mt. Pleasant.
S. H. Todd, Wakeman.
J. E. Wing, Mechanicsburg.
C. G. Williams, Gustavus.

We also recommend that the matter of fixing dates for and assigning speakers to the institutes be referred to W. W. Miller, secretary, with power to act for the Board.

Should the report of your committee prove satisfactory, we believe it to be necessary that it be received and adopted by formal action of the Board, and that the secretary be instructed to make it a matter of record with the minutes of this meeting.

GIDEON LIGGETT,
J. T. ROBINSON,
E. C. ELLIS,
Institute Committee.

Columbus, O., Oct. 1, 1895.

The Assistant Secretary presented a financial statement, covering receipts and disbursements, for ten months of the fiscal year, being from December 1, 1894, to October 1, 1895, which statement was accepted and filed.

At the conclusion of regular business, the committee appointed to make settlement with Ft. Wayne Electric Corporation, took the matter into consideration, and closed a purchase from said Corporation of the plant as installed on the grounds under the contract. Fifteen additional arc lights, poles, etc., placed on the grounds and fifteen incandescent lights in the headquarters building, all for the sum of eight thousand five hundred and fifty dollars (\$8,550).

The President and Secretary were authorized to execute a note of the Board, to protect any bank over draft for current expense.

In the list of Farmers' Institute lecturers, the Secretary was directed to substitute the name of John L. Shawver for that of Isaac Kagy.

The compensation agreed upon by the Board for institute lecturers, was four and five dollars per day and expenses.

The Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,
Columbus, Dec. 13, 1895, 9:50 A. M.

The Board met pursuant to the call of the President, and on call of the roll all members were found to be present. The minutes of the preceding meeting were read and approved.

The President announced that he had appointed Messrs. Bordwell, Ohmer and Robinson as a committee to examine and audit the books and accounts of the Board, which work was completed and the committee ready to report at the proper time.

Mr. Liggett reported, that at the last State Fair, O. E. Lincoln & Son, had, by error, entered in the Delaine Merino sheep sweepstakes and paid the sum of two dollars and fifty cents (\$2.50) entrance fees.

They were not permitted to show and hence should have the amount of fee paid, returned to them, which, on motion, was agreed to.

A claim by J. L. Ropp, of Marcy, O., and one by McPerfect, of Sunbury, for return of entrance fees, were not granted, there being insufficient grounds, within the rules, to sustain their claims.

The Secretary presented a statement showing the number of squares of Bodine roofing on the fair ground buildings that had been repaired by the Harmon Felt Roofing Co., under its contract with the Board, which statement had been attached to the contract. The Secretary also reported that he had instructed the Superintendent of the grounds to examine the repaired roofs, and he had done so immediately after the recent rains, finding that leaks existed in many of the roofs and in many places, of which facts the Harmon Roofing Co. and also the Neil Felt Roofing Co., had been duly notified in writing.

The Assistant Secretary presented a financial statement, covering the transactions for the fiscal year 1895 and the general financial condition of the Board, which statement was, on motion of Mr. Kling, received and ordered to be incorporated in the journal of accounts.

The committee appointed to examine and audit the books and accounts, presented its report, which, on motion of Mr. Ellis, was adopted and ordered to be recorded in the journal of accounts.

The Assistant Secretary reported the proceedings of the Eastern and Western Fair Association, taken at the Chicago meeting, November 19, 1895, submitting the several recommendations made.

The Secretary reported that notice had been received that the Mechanics Insurance Co. would cancel its policies held on state fair buildings. On motion of Mr. Bordwell, it was agreed that the cancelled insurance should not be replaced.

On motion of Mr. Kling, it was agreed that on the expiration of any insurance on state fair buildings, that no renewals be taken out until further orders from the Board, this action being deemed advisable owing to the great increase in rate for insurance demanded by the companies.

The dates for the Ohio State Fair of 1896 were fixed for August 31 and September 1, 2, 3 and 4.

Recess until 2 o'clock P. M., at which hour the Board re-convened and proceeded to revise and adopt the premium list for the fair of 1896. The work was taken up by departments and continued to completion, except that the woman's department was referred to Capt. Bower to revise

and the speed classes to the member that may be in charge and the Assistant Secretary, five thousand five hundred dollars(\$5,500) to be the limit of speed offerings.

Adjourned to meet at call of President.

DEPARTMENT OF AGRICULTURE,
Columbus, January 13, 1896, 8:00 P. M.

The Board met pursuant to the call of the President, all members present. The reading of the minutes of the preceding meeting was dispensed with.

The President stated the object of the meeting to be the closing up of unfinished business for the year and preparing for the Annual State Agricultural Convention; but as the rooms of the Department were being used in connection with the Governor's inaugural program, it would be advisable to hold a very short session, and join in paying respects to the new Governor.

The Secretary reported an interview had with Governor Bushnell several weeks since, and the presentation to him of a memorial relative to agriculture. The Secretary stated that he was most cordially received and found the then Governor-elect acquainted with the condition of agriculture in the state and fully alive to its importance and the need of encouragement.

The following resolutions were unanimously adopted:

Resolved, That the Ohio State Board of Agriculture, fully realizing the agricultural situation in the state, as expressed by Governor Asa S. Bushnell in his inaugural address, desire to warmly commend Governor Bushnell for the just recognition and earnest interest he has manifested for agriculture in this, his first public document, an interest that must command the confidence of the farmers of the entire state.

Resolved, That it is the sense of this Board, that the agriculturists of the state, irrespective of party affiliations, should extend their hearty endorsement and gratitude to Governor Bushnell for his kind and timely expressions in behalf of the agricultural interests of the commonwealth.

On motion an adjournment was taken until 8:30 o'clock Tuesday morning, January 14th, at which hour the Board reassembled and was called to order by President Clark. Members all present except Mr. Kling. The minutes of the two preceding meetings were read and approved.

On motion of Mr. Robinson, a recess was taken until 3 o'clock P. M., in order to attend the opening session of the Farmers' and Breeders' Institute, at which hour the Board re-convened and proceeded to take up unfinished business.

The Assistant Secretary presented the printed proceedings of the last meeting of the Eastern and Western Fair Association, calling attention to certain items of recommendations that had not been fully considered at the last meeting of the Board.

The recommendations to combine in one class, Clydesdale and Shire horses, and in another German and French Coachers, and the establishment of a class for Morgans were agreed to.

On motion of Mr. Pringle, it was agreed to add throughout the horse classes, premiums of five dollars (\$5) and three dollars (\$3) each, for stallion and filly colts.

Mr. Geo. McKerrow and W. A. Shaffor, representing the American Oxford Down Association, appeared before the Board to urge a separate class for Oxford Down Sheep.

On motion of Mr. Liggett, it was agreed to make a distinct class for Oxford Downs.

The Secretary presented several communications relative to the establishment of new classes in the list of premium offers.

On motion of Mr. Ellis, it was agreed as not advisable to consider the requests at this time.

On motion of Mr. Ellis, the Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE,

Thursday January 16, 1896, 9:00 P. M.

The Board convened at the call of the President. Members all present. The minutes of the preceding meeting were read and approved.

There being no further business to come before the Board of 1895, a motion prevailed to adjourn *sine die*.

Attest:

W. W. MILLER, Secretary.

J. W. FLEMING, Assistant Secretary.

CROP AND LIVE STOCK STATISTICS

AS ESTIMATED BY THE

OHIO STATE BOARD OF AGRICULTURE,

FROM RETURNS RECEIVED FROM ITS CORPS OF REGULAR TOWNSHIP CROP
CORRESPONDENTS, DURING THE SEASON OF 1895.

The object of crop and live stock reporting has been frequently stated and, we believe, is now quite thoroughly understood and appreciated by producers. The Department of Agriculture, unlike manipulators at the grain buying centers, has not a single object in view except to place before farmers the facts relative to crops and live stock as they truly exist and according to the best information possible to secure from a corps of regular township correspondents, consisting of farmers and practical men, able to judge of conditions as they appear from time to time.

Reports are published promptly each month and sent to farmers in every county of the state and condensed summaries are furnished the agricultural and news press, so that the information is spread among farmers within a few days after it is received from our correspondents.

In this annual report is incorporated such of the monthly reports as bear upon the acreage and product of the principal crops grown and reported upon. This gives much earlier information than can be secured from the general agricultural statistics as returned by township assessors, and also is a matter of agricultural record.

The following reports made for July, October, November and December embody the acreage and product of the principal crops and represent fairly the year's results.

Following the crop reports will be found a table showing wheat and corn production from 1850 to 1895, inclusive, together with range of prices and average prices for each year, and the same by series of ten years each.

Following these statistics will be found the number of live stock for the years 1894-1895, as returned to the Auditor of State.

ACREAGE AND CONDITION OF CROPS JULY 1, 1895.

The following estimates are based on reports received from the regular township crop correspondents of the Department, the percentages as made by the correspondents being carefully averaged by townships, then by counties and for the State. Acreage is by comparison with last year; condition or prospective yield by comparison with a full average.

WHEAT — Condition compared with an average	58 per cent.
“ Area sown last fall	2,278,431 acres.
“ Plowed up this spring	2.4 per cent.
“ Estimated area for the harvest	2,225,534 acres.
BARLEY — Condition compared with an average	65 per cent.
“ Estimated area for the harvest	14,842 acres.
RYE — Area sown last fall	38,430 “
“ Plowed up this spring	1.4 per cent.
“ Estimated area for the harvest	37,921 acres.
OATS — Area sown in 1894	981,456 “
“ Sown this year compared with 1894	98.2 per cent.
“ Estimated area for the harvest	964,032 acres.
“ Condition compared with an average	60 per cent.
CORN — Area planted in 1894	2,828,517 acres.
“ Area this year compared with 1894	101 per cent.
“ Estimated area for 1895	2,853,535 acres.
“ Condition compared with an average	85 per cent.
“ Damage by grub worm	12 “
CLOVER — Damage by grub worm	4 “
“ Tons produced per acre	$\frac{3}{4}$ ton.
“ Quality compared with an average	76 per cent.
POTATOES — Area planted in 1894	142,680 acres.
“ Area this year compared with 1894	101 per cent.
“ Estimated area for 1895	144,253 acres.
“ Condition compared with an average	74 per cent.
TOBACCO — Acreage compared with last year	66 “
TIMOTHY — Condition compared with an average	40 “
HORSES — Condition compared with an average	89 “
PASTURES — Condition compared with an average	56 “
COLTS — Number compared with an average	48 “
CATTLE — Condition compared with an average	87 “
CALVES — Number compared with an average	84 “

There can now be no doubt as to the shortage of the wheat crop. Prospect has been on the decline for the past two months and during June dropped ten points, according to the best estimates. Present indications point to but fifty-eight per cent. of a full average, which with the decrease in acreage will result in a crop from sixteen to twenty millions short of a fair average, and even more compared with the abnormally large crop of last year. The area seeded last fall was 200,000 acres less than that seeded for the 1894 harvest, besides, there was estimated to have been plowed up this spring about fifty thousand acres.

In many counties there is an increased area of oats, but condition is generally low.

Corn shows a slight increase in area as compared with last year, and while condition is not generally good at this date, there is yet time for the making of a good crop, with favorable weather conditions. Recent rains in many localities have been of great benefit to the corn crop, and farmers have been able to cultivate to advantage. In some localities the last cultivation has been given.

Potatoes have an increased area as compared with last year, but prospects are low. The most favorable weather must occur to make more than seventy-five per cent. of an average crop.

Timothy hay was very short over the entire State; in many localities almost a total failure.

Corn and clover have been damaged considerably by white grub worms.

Altogether the crop prospects for 1895 are far below even a fair average, while prices of live stock continue low.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON
THE ACREAGE AND CONDITION OF CROPS JULY 1, 1895.

Counties.	Wheat				Barley.	
	Condition.	Area Sown Last Fall.	Plowed Up This Spring.	Estimated Area for The Harvest.	Condition.	Estimated Area for The Harvest.
	Per Ct.	Acres.	Per Ct.	Acres	Per Ct.	Acres.
Adams	71	18,351	2	17,984	..	10
Allen	58	26,753	1	26,485	..	16
Ashland	46	33,230	2	32,565	56	188
Ashtabula	57	12,540	1	12,415	92	678
Athens	69	8,065	3	7,823	..	15
Auglaize	66	30,634	5	29,102	65	422
Belmont	51	22,162	1	21,940	50	32
Brown	58	28,543	..	28,543	..	20
Butler	59	47,498	2	46,528	71	1,599
Carroll	55	16,857	..	16,357	..	29
Champaign	42	47,039	4	45,157	..	10
Clark	60	33,786	4	32,435	78	59
Clermont	66	24,311	1	24,068	..	4
Clinton	46	35,336	3	34,276	57	79
Columbiana	44	18,136	1	17,955	..	36
Coshocton	33	23,387	6	21,984	..	2
Crawford	55	28,510	..	28,510	70	183
Cuyahoga	57	9,341	1	9,258	..	20
Darke	46	58,856	3	57,090	39	526
Defiance	78	26,000	..	26,000	80	217
Delaware	50	20,767	6	19,521	80	7
Erie	56	14,687	1	14,540	61	1,286
Fairfield	45	35,305	1	34,952	42	16
Fayette	59	26,282	6	24,505	..	26
Franklin	44	34,758	4	33,367	..	23
Fulton	59	34,019	..	34,019	25	325
Gallia	58	13,961	4	13,403	..	9
Geauga	52	6,111	..	6,111	..	13
Greene	61	39,381	1	38,987	56	80
Guernsey	54	13,265	..	13,265	55	16
Hamilton	75	15,645	..	15,645	87	296
Hancock	52	43,496	3	42,171	38	29
Hardin	73	30,405	2	29,797	20	25
Harrison	49	10,555	2	10,344	50	5
Henry	71	28,617	1	28,329	75	144
Highland	55	35,989	..	35,989	50	10
Hocking	68	10,153	2	9,950	..	11
Holmes	50	34,265	5	32,552	..	86
Huron	65	26,800	..	26,800	62	187
Jackson	85	7,390	..	7,390	..	2
Jefferson	40	19,407	5	18,437	..	75
Knox	41	29,783	1	29,485	..	18
Lake	56	4,081	7	3,795	75	172
Lawrence	67	8,806	3	8,542	67	11
Licking	49	37,284	2	36,538	..	23
Logan	43	26,290	3	25,501	46	128
Lorain	62	16,777	1	16,609	76	366
Lucas	61	15,615	..	15,615	80	547
Madison	52	27,406	9	24,939	..	11

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Wheat.				Barley.	
	Condition.	Area Sown Last Fall.	Plowed Up This Spring.	Estimated Area for The Harvest.	Condition.	Estimated Area for The Harvest.
	Per Ct.	Acres.	Per Ct.	Acres.	Per Ct.	Acres.
Mahoning	45	12,801	1	12,673	..	31
Marion	63	25,433	6	23,907	72	62
Medina	55	19,677	6	18,496	..	32
Meigs	50	12,788	..	12,788	..	48
Mercer	85	39,273	..	39,273	..	503
Miami	47	41,105	2	40,283	45	458
Monroe	64	18,260	2	17,895	..	2
Montgomery	53	38,231	3	37,084	78	545
Morgan	68	9,540	1	9,445	..	..
Morrow	56	16,000	3	15,520	..	16
Muskingum	45	19,504	2	19,114	52	25
Noble	62	13,407	..	13,407	..	..
Ottawa	72	16,596	..	16,596	65	1,620
Paulding	83	15,921	..	15,921	..	31
Perry	61	13,408	1	13,274	80	8
Pickaway	59	53,501	3	51,896	..	10
Pike	50	13,675	2	13,402	..	136
Portage	33	20,263	10	18,237	..	91
Preble	58	41,384	..	41,384	60	197
Putnam	73	31,363	1	31,049	90	81
Richland	65	43,321	..	43,321	..	199
Ross	57	38,342	1	37,959	100	23
Sandusky	68	35,278	4	33,867	75	335
Scioto	73	13,184	..	13,184	75	22
Seneca	76	51,077	..	51,077	90	62
Shelby	52	34,265	1	33,922	38	524
Stark	39	39,569	3	38,380	..	75
Summit	50	24,382	5	23,163	60	18
Trumbull	45	10,718	5	10,182	..	18
Tuscarawas	50	26,602	2	26,070	..	37
Union	45	23,060	10	20,754	..	5
Van Wert	67	29,820	1	29,522	90	180
Vinton	68	7,040	1	6,970	83	2
Warren	67	37,091	1	36,725	83	520
Washington	69	26,455	1	26,190	..	5
Wayne	43	46,998	3	45,588	70	48
Williams	48	31,391	..	31,391	62	108
Wood	66	49,102	2	46,120	68	645
Wyandot	51	22,471	2	22,022	64	28
Averages	58	.....	2.4	.....	65	.....
Totals .....	..	2,278,431	..	2,225,534	..	14,842

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Rye.			Oats.			
	Area Sown Last Fall.	Plowed Up This Spring.	Estimated Area for the Harvest.	Area Sown in 1894.	Sown This Year Compared with 1894.	Estimated Area for Harvest of 1895.	Condition Compared with an Average.
	<i>Acres.</i>	<i>Per Ct.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Per Ct.</i>	<i>Acres.</i>	<i>Per Ct.</i>
Adams	265	16	223	2,615	93	2,432	53
Allen	343	2	336	10,573	94	9,938	54
Ashland	148	6	139	19,297	98	18,911	69
Ashtabula	410	10	369	15,183	99	15,031	79
Athens	43	..	43	2,336	92	2,149	30
Auglaize	347	1	343	12,646	89	11,255	59
Belmont	139	..	139	10,576	99	10,470	36
Brown	964	5	916	6,733	75	5,050	37
Butler	355	..	355	9,489	99	9,394	94
Carroll	186	..	186	14,137	101	14,278	57
Champaign	351	..	351	7,068	100	7,068	57
Clark	830	6	780	5,401	98	5,293	69
Clermont	987	..	987	7,628	94	7,170	72
Clinton	190	1	168	4,798	94	4,510	56
Columbiana	243	1	241	19,686	97	19,095	76
Coshocton	207	3	201	9,351	92	8,603	44
Crawford	173	..	173	21,224	93	19,738	63
Cuyahoga	580	5	551	14,740	95	14,003	78
Darke	819	6	798	19,246	102	19,631	52
Defiance	365	..	365	15,995	104	16,635	66
Delaware	188	2	184	7,620	101	7,696	59
Erie	496	5	471	12,385	99	12,261	69
Fairfield	135	1	134	4,287	86	3,687	56
Fayette	322	..	322	1,203	93	1,119	70
Franklin	90	4	86	6,826	94	6,416	43
Fulton	664	..	664	18,253	98	17,888	62
Gallia	75	4	72	3,238	93	3,011	37
Geauga	65	2	64	10,108	105	10,613	72
Greene	479	7	445	4,957	95	4,709	70
Guernsey	338	..	338	8,232	97	7,975	38
Hamilton	806	11	717	4,052	99	4,011	74
Hancock	968	10	871	12,890	100	12,890	54
Hardin	933	6	877	17,052	101	17,223	66
Harrison	56	..	56	7,883	96	7,088	39
Henry	3,512	2	3,442	8,651	100	8,651	70
Highland	282	..	282	2,974	87	2,587	50
Hocking	71	..	71	2,360	104	2,454	64
Holmes	492	..	492	16,357	102	16,684	82
Huron	196	2	192	26,210	102	26,734	69
Jackson .....	..	..	..	1,913	95	1,817	35
Jefferson	36	..	36	11,836	101	11,954	29
Knox	347	..	347	12,054	103	12,416	61
Lake	551	10	496	6,710	93	6,240	59
Lawrence	155	9	141	4,389	90	3,950	69
Licking	334	..	334	10,169	94	9,555	50
Logan	330	6	310	8,921	91	8,117	44
Lorain	205	1	203	19,063	101	19,254	77
Lucas	1,398	..	1,398	10,569	100	10,569	73
Madison	423	5	402	2,946	95	2,799	46

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Rye.			Oats.			
	Area Sown Last Fall.	Plowed Up This Spring.	Estimated Area for the Harvest.	Area Sown in 1894.	Sown This Year Compared with 1894.	Estimated Area for Harvest of 1895.	Condition Compared with an Average.
	Acres.	Per Ct.	Acres.	Acres.	Per Ct.	Acres.	Per Ct.
Mahoning	337	1	334	15,856	100	15,856	79
Marion	225	1	223	14,275	93	13,276	64
Medina	47	..	47	18,042	101	18,222	60
Meigs	34	..	34	3,043	75	2,282	50
Mercer	746	..	746	19,264	104	20,035	77
Miami	204	..	204	13,856	100	13,856	66
Monroe	216	..	216	7,906	102	8,164	33
Montgomery	473	10	426	12,250	105	12,763	63
Morgan	83	..	83	4,192	94	3,940	42
Morrow	672	..	672	14,159	99	14,017	68
Muskingum	1,319	10	1,187	7,874	92	7,234	31
Noble	69	..	69	5,725	95	5,439	37
Ottawa	388	2	380	7,225	102	7,370	87
Paulding	830	..	830	7,014	100	7,014	69
Perry	156	1	154	5,105	99	5,054	47
Pickaway	147	10	132	1,565	86	1,346	62
Pike	2	..	2	5,035	93	4,683	41
Portage	152	5	144	17,023	102	17,363	71
Preble	292	10	263	12,802	102	13,058	82
Putnam	1,398	11	1,244	5,282	92	4,859	66
Richland	570	..	570	25,335	100	25,335	74
Ross	184	..	184	3,094	88	2,723	59
Sandusky	630	..	630	14,400	98	14,112	69
Scioto	80	..	80	4,617	101	4,663	63
Seneca	433	..	433	20,655	96	19,829	62
Shelby	297	7	276	17,565	99	17,389	41
Stark	187	1	185	28,202	95	26,798	79
Summit	139	1	138	17,698	92	16,282	72
Trumbull	134	5	127	17,755	104	18,465	92
Tuscarawas	183	3	178	18,747	93	18,435	60
Union	428	..	428	7,642	93	7,107	57
Van Wert	2,286	10	2,057	11,998	99	11,878	81
Vinton	77	1	76	2,089	84	1,755	47
Warren	479	..	479	6,923	95	6,577	59
Washington	161	1	159	9,214	98	9,020	46
Wayne	145	..	145	25,363	98	24,856	76
Williams	230	..	230	22,275	100	22,275	63
Wood	1,747	1	1,730	26,141	103	26,925	70
Wyandot	356	6	335	11,895	99	11,756	55
Averages .....	..	1.4	.....	..	98.2	.....	60
Totals	38,430	..	37,921	981,456	..	964,032	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Corn.					
	Area Planted in 1894.	Area This Year Compared With 1894.	Estimated Area for 1895.	Condition Com- pared With an Average.	Damage By Cut Worm.	Damage by White Grub Worm.
	<i>Acres.</i>	<i>Per Ct.</i>	<i>Acres.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>P. Ct.</i>
Adams	35,785	99	35,426	84	7	6
Allen	34,426	100	34,426	85	10	...
Ashland	23,738	106	25,162	91	17	4
Ashtabula	9,252	105	9,715	93	9	3
Athens	17,683	100	17,683	80	20	4
Auglaize	37,543	98	36,792	90	8	1
Belmont	25,292	100	25,292	64	33	1
Brown	43,277	100	43,277	88	28	...
Butler	55,303	103	56,962	94	21	1
Carroll	13,974	103	14,393	88	8	2
Champaign	50,969	100	50,969	97	1	...
Clark	45,884	102	46,802	94	8	4
Clermont	33,342	103	34,342	90	20	1
Clinton	50,706	98	49,692	91	8	2
Columbiana	18,305	102	18,671	88	18	5
Coshocton	24,453	104	25,431	74	20	2
Crawford	34,098	103	35,121	89	9	3
Cuyahoga	9,609	106	10,186	87	15	1
Darke	75,881	97	73,605	86	7	1
Defiance	24,771	98	24,276	84	10	3
Delaware	32,749	99	32,422	90	11	1
Erie	16,704	102	17,038	91	6	...
Fairfield	50,829	97	49,304	72	30	10
Fayette	51,220	99	50,708	91	4	...
Franklin	59,608	100	59,608	84	10	1
Fulton	26,495	98	25,965	73	11	...
Gallia	23,110	100	23,110	77	6	4
Geauga	7,075	110	7,783	91	15	1
Greene	54,098	100	54,098	93	10	5
Guernsey	1,888	95	1,794	86	10	2
Hamilton	15,916	102	16,233	88	9	1
Hancock	50,760	99	50,252	65	20	...
Hardin	35,277	101	35,630	90	16	...
Harrison	13,048	99	13,809	72	20	4
Henry	40,931	101	41,340	88	22	...
Highland	48,417	100	48,417	88	12	2
Hocking	14,281	103	14,709	83	13	...
Holmes	22,681	105	23,815	86	15	3
Huron	26,564	99	26,298	100	15	2
Jackson	13,300	102	13,566	92	10	...
Jefferson	14,011	98	13,731	88	10	3
Knox	31,482	104	32,741	88	11	1
Lake	4,669	74	3,455	80	10	2
Lawrence	21,761	99	21,543	81	20	2
Licking	47,659	110	52,425	85	10	3
Logan	39,740	99	39,343	76	15	1
Lorain	16,845	101	17,013	94	15	3
Lucas	17,091	106	18,116	84	4	1
Madison	70,333	109	76,663	98	9	1
Mahoning	13,455	111	15,835	86	11	5

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Corn.					
	Area Planted in 1894.	Area This Year Compared With 1894.	Estimated Area for 1895.	Condition Compared With an Average.	Damage By Cut Worm.	Damage By White Grub Worm.
Adams	Acres. 39,907	Per Ct. 99	Acres. 39,508	Per Ct. 96	Per Ct. 7	P. Ct. 2
Allen	18,242	105	19,154	90	5	2
Anderson	16,554	100	16,554	60	5	...
Ashtabula	49,917	105	52,413	84	11	3
Ashland	51,565	100	51,565	92	8	1
Baldwin	17,532	99	17,357	73	25	7
Belmont	46,810	100	46,810	90	3	2
Berkley	16,863	98	16,526	72	25	13
Bethesda	25,080	99	24,829	95	14	1
Bloomington	29,429	99	29,135	80	10	2
Bolton	17,488	97	16,963	83	13	2
Brown	17,119	98	16,777	93	8	...
Buckeye	27,415	103	28,237	87	3	...
Burlington	35,767	92	32,906	77	25	2
Cadiz	69,263	100	69,263	77	11	1
Caldwell	22,330	94	20,990	79	10	...
Canton	14,009	109	15,270	74	15	...
Carrington	49,481	100	49,481	100	...	...
Cass	45,533	106	48,265	85	10	3
Cedar	30,162	97	29,257	81	12	5
Chardon	65,705	102	67,019	86	20	3
Chillicothe	36,530	99	36,165	94	...	...
Cincinnati	21,231	96	20,382	75	5	2
Clermont	43,554	101	43,990	86	7	...
Columbus	41,394	100	41,394	80	9	2
Crawford	29,957	99	29,657	82	15	3
Cuyahoga	17,407	102	17,755	80	10	1
Darwin	12,579	102	12,831	89	19	2
Dayton	22,076	100	22,076	83	10	...
Deerfield	53,777	102	54,853	92	...	3
Delaware	47,253	94	44,418	84	10	3
DeWitt	12,627	102	12,880	82	9	2
Dodge	56,184	100	56,184	90	5	...
Douglas	23,082	101	23,313	76	19	1
Dresden	35,159	104	36,565	85	15	3
Durham	25,153	100	25,153	78	8	2
East	69,627	103	71,716	84	8	...
Edinburg	31,568	98	30,937	91	9	1
Elmore	...	101	...	85	12	2
Euclid	2,828,517	...	2,853,535	...	...	...

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Clover.			Potatoes.			
	Damage by White Grub Worm.	Tons Produced Per Acre.	Quality Compared With an Aver- age.	Area Planted in 1894.	Area This Year Compared With 1894.	Estimated Area for 1895.	Condition Com- pared With an Average.
	Per Ct.	Tons.	Per Ct.	Acres.	Per Ct.	Acres.	Per Ct.
Adams	6	.85	82	257	97	249	62
Allen	1	.39	80	1,113	97	1,079	62
Ashland	13	.65	77	1,245	104	1,295	92
Ashtabula	1	.71	76	2,766	131	3,623	100
Athens	7	.50	88	985	102	1,005	45
Auglaize	11	.67	73	1,459	85	1,240	82
Belmont	2	.32	75	1,813	99	1,795	46
Brown .....	..	1.00	68	980	100	980	75
Butler	1	.97	94	1,809	98	1,773	80
Carroll	3	.52	88	764	103	787	86
Champaign .....	..	.37	77	1,022	100	1,022	85
Clark	1	1.00	88	1,577	101	1,573	77
Clermont	2	.90	74	1,726	98	1,691	68
Clinton	3	.61	95	3,336	99	3,303	76
Columbiana	4	.30	70	2,013	108	2,174	80
Coshocton	4	.50	68	1,332	98	1,305	61
Crawford	8	.68	74	1,358	102	1,385	93
Cuyahoga	2	1.10	79	5,639	108	6,090	84
Darke	2	.72	74	2,684	91	2,523	74
Defiance	7	.96	87	1,134	100	1,134	65
Delaware	2	.65	76	987	97	957	72
Erie	2	1.00	84	2,874	105	3,018	81
Fairfield	3	.71	73	1,720	98	1,686	62
Fayette	6	1.06	75	227	91	207	73
Franklin	6	.73	81	3,891	96	3,735	63
Fulton	4	.90	74	1,432	94	1,346	60
Gallia	3	.75	90	657	92	604	59
Geauga	10	.44	58	2,102	110	2,312	90
Greene	8	.81	92	1,065	98	1,044	84
Guernsey	1	.50	73	673	98	626	48
Hamilton	10	.77	69	4,987	105	5,236	60
Hancock .....	..	.69	74	1,406	100	1,406	90
Hardin	3	.79	80	2,735	101	2,762	85
Harrison	5	.39	81	454	95	431	56
Henry .....	..	1.25	95	1,326	94	1,246	66
Highland	5	.50	50	493	95	370	62
Hocking	1	.62	87	846	100	846	72
Holmes	2	.52	78	1,017	102	1,037	88
Huron	9	.89	84	1,693	105	1,683	97
Jackson .....	..	.75	87	212	90	191	72
Jefferson	5	.30	73	1,943	107	2,079	75
Knox	2	.50	82	877	100	877	88
Lake	10	.75	76	1,013	100	1,013	86
Lawrence	5	1.00	84	500	97	485	63
Licking	3	.74	80	1,817	95	1,726	67
Logan	5	.47	68	849	95	807	76
Lorain .....	..	.71	79	1,903	102	1,941	94
Lucas	4	.90	87	3,186	109	3,473	74
Madison	4	.75	92	478	96	459	69
Mahoning .....	..	.52	62	3,413	106	3,618	76

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Clover.			Potatoes.			
	Damage by White Grub Worm.	Tons Produced Per Acre.	Quality Compared With an Average.	Area Planted in 1894.	Area This Year Compared With 1894.	Estimated Area for 1895.	Condition Compared With an Average.
	Per Ct.	Tons.	Per Ct.	Acres.	Per Ct.	Acres.	Per Ct.
Marion	2	.64	81	1,335	97	1,295	87
Medina	2	.60	60	1,697	105	1,782	85
Meigs	..	.50	..	1,338	100	1,338	50
Mercer	..	.75	100	833	102	850	50
Miami	4	.60	47	2,491	94	2,257	85
Monroe	8	.71	92	1,327	108	1,433	43
Montgomery	..	1.00	67	1,723	102	1,757	68
Morgan	4	1.06	69	773	94	726	67
Morrow	1	.53	79	1,447	104	1,505	92
Maskingum	3	.48	75	1,663	97	1,615	65
Noble	2	.59	55	765	100	765	68
Ottawa	..	1.50	98	719	107	769	93
Paulding	5	.81	80	707	101	714	78
Perry	6	.83	77	761	96	730	72
Pickaway	3	.87	91	1,304	85	1,108	84
Pike	..	1.08	87	586	88	515	50
Portage	10	.41	60	4,961	108	5,366	95
Preble	3	1.23	90	768	100	768	73
Putnam	20	.83	73	3,198	101	3,229	56
Richland	9	.92	78	2,070	100	2,070	86
Ross	2	1.11	79	2,202	89	1,960	46
Sandusky	4	.87	90	2,275	105	2,389	81
Scioto	..	2.00	72	1,117	93	1,039	60
Seneca	..	.83	79	2,039	96	1,957	85
Shelby	6	.58	84	992	98	972	80
Stark	3	.53	45	2,897	100	2,897	82
Summit	9	.39	45	2,375	105	2,494	89
Trumbull	..	.75	66	2,867	110	3,154	98
Tuscarawas	5	.47	79	2,229	96	2,141	72
Union	3	.67	85	634	100	634	88
Van Wert	1	.80	70	1,162	87	1,011	77
Vinton	6	.70	81	465	87	405	67
Warren	..	.73	90	911	97	883	81
Washington	5	.56	80	2,543	102	2,594	57
Wayne	5	.52	60	2,276	104	2,397	98
Williams	10	1.00	92	1,037	100	1,037	81
Wood	4	1.03	82	1,447	92	1,331	55
Wyandot	4	.62	71	969	100	969	92
Averages	4	.75	76	.....	101	.....	74
Totals	..	....	....	142,680	...	144,253	....

OFFICIAL REPORT OF THE OHIO STATE BOARD OF AGRICULTURE, ETC.
CONTINUED.

Counties.	To- bacco.	Timo- thy.	Horses.	Pas- tures.	Colts.	Cattle.	Calves.
	Ac- reage com- pared with last year.	Con- dition com- pared with an average.	Con- dition com- pared with an average.	Con- dition com- pared with an average.	Num- ber com- pared with an average.	Con- dition com- pared with an average.	Num- ber com- pared with an average.
	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>
Adams	66	59	96	74	46	92	92
Allen .....	..	30	93	38	63	73	95
Ashland	90	47	93	44	60	89	86
Ashtabula .....	..	44	93	66	62	93	91
Athens .....	..	18	84	22	54	66	78
Auglaize	60	38	88	50	67	78	90
Belmont	74	29	80	25	29	69	98
Brown	67	63	92	77	48	83	83
Butler	86	60	99	76	63	96	93
Carroll .....	..	37	98	62	48	87	98
Champaign .....	..	29	59	52	70	87	80
Clark	70	45	97	50	63	88	93
Clermont	53	51	95	61	24	90	93
Clinton	56	41	93	56	44	93	83
Columbiana .....	..	29	89	38	57	82	80
Coshocton .....	..	27	76	27	26	79	81
Crawford .....	..	43	96	68	66	88	93
Cuyahoga	50	53	94	64	50	92	95
Darke	75	37	92	57	66	81	98
Defiance .....	..	47	92	48	67	82	91
Delaware .....	..	29	94	48	57	92	90
Erie .....	..	47	99	56	46	89	87
Fairfield .....	..	61	93	47	54	78	85
Fayette .....	..	31	93	46	59	89	91
Franklin .....	..	27	96	39	39	87	69
Fulton .....	..	44	82	33	24	80	82
Gallia .....	..	54	87	59	34	82	93
Geauga .....	..	34	97	46	65	85	85
Greene	86	49	92	48	34	89	85
Guernsey	67	31	83	23	39	98	87
Hamilton	72	42	92	66	57	89	67
Hancock	90	35	94	59	62	87	91
Hardin .....	..	42	96	58	43	83	91
Harrison	50	33	74	29	43	67	78
Henry .....	..	43	97	44	43	79	90
Highland	50	25	90	50	50	62	75
Hocking .....	..	58	95	58	40	87	97
Holmes	100	43	92	43	48	86	95
Huron .....	..	47	97	61	48	92	79
Jackson	50	45	85	50	72	88	100
Jefferson .....	..	26	87	26	28	70	60
Knox .....	..	30	100	58	34	91	82
Lake	100	40	95	73	53	93	47
Lawrence	87	59	88	67	71	92	88
Licking .....	..	49	86	56	43	70	79
Logan	50	35	89	48	52	83	84
Lorain .....	..	38	84	76	39	89	84
Lucas .....	..	41	92	33	52	74	62
Madison .....	..	35	96	53	72	89	74
Mahoning .....	..	34	90	57	62	86	86

OFFICIAL REPORT OF THE OHIO STATE BOARD OF AGRICULTURE, ETC.
CONCLUDED.

Counties.	To- bacco.	Timo- thy.	Horses.	Pas- tures.	Colts.	Cattle.	Calves.
	Ac- reage com- pared with last year.	Con- dition com- pared with an average.	Con- dition com- pared with an average.	Con- dition com- pared with an average.	Num- ber com- pared with an average.	Con- dition com- pared with an average.	Num- ber com- pared with an average.
	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.
Marion	90	37	92	69	52	96	92
Medina	60	50	90	50	40	90	80
Meigs .....	..	40	80	40	40	90	90
Mercer .....	..	40	87	40	30	80	82
Miami	76	36	87	40	58	85	98
Monroe	48	22	92	28	27	70	78
Montgomery	93	56	97	57	85	93	100
Morgan	32	39	80	37	20	77	81
Morrow	90	38	99	57	61	89	94
Muskingum	90	25	84	32	42	76	84
Noble	87	37	80	26	41	81	80
Ottawa .....	..	55	93	86	42	87	75
Paulding	60	50	93	42	49	96	84
Perry	60	43	88	43	26	95	79
Pickaway .....	..	40	97	54	65	83	87
Pike	70	39	87	59	69	84	71
Portage .....	..	27	95	58	46	78	70
Preble	95	56	100	73	53	92	100
Putnam .....	..	33	92	37	58	87	74
Richland .....	..	47	92	61	48	87	71
Ross .....	..	35	90	47	43	84	94
Sandusky .....	..	62	92	42	65	61	85
Scioto	80	42	95	43	75	87	95
Seneca .....	..	56	96	69	68	86	65
Shelby	70	32	96	37	28	78	88
Stark .....	..	34	87	49	39	79	78
Summit .....	..	36	87	39	58	81	93
Trumbull .....	..	29	97	73	42	89	76
Tuscarawas	25	35	88	40	31	70	86
Union .....	..	33	97	57	30	92	83
Van Wert .....	..	34	98	46	53	89	78
Vinton	87	38	91	45	52	83	85
Warren	85	49	98	59	37	90	91
Washington	50	38	82	42	31	72	78
Wayne	50	30	92	40	36	88	83
Williams .....	..	41	96	52	24	94	90
Wood	100	40	98	47	33	77	89
Wyandot	70	32	97	49	64	93	94
Averages	66	40	89	56	48	87	84

ACREAGE, PRODUCT AND CONDITION OF CROPS OCTOBER 1, 1895.

This report is the first presenting estimates in bushels per acre and total bushels produced, of the grain crops of this year's harvest. The figures are based on reports from the regular township crop correspondents of this Department, as well as upon results of actual threshing done throughout every county. The conclusions reached are from the best and most reliable sources and represent the facts as near as is possible without an actual farm to farm enumeration:

WHEAT	— Area sown last fall for the harvest of 1895.	2,278,431 acres.
"	Plowed up this spring.	2.4 per cent.
"	Total estimated area harvested in 1895.	2,225,534 acres.
"	Product per acre estimated from threshers' returns.	11.9 bushels.
"	Total estimated product of 1895 harvest.	26,520,930 bushels.
"	Quality compared with an average.	81 per cent.
"	Crop of 1894 still in producers' hands.	11 "
OATS	— Estimated area for the harvest of 1895.	964,032 acres.
"	Product per acre estimated from threshers' returns.	30.1 bushels.
"	Total estimated product of 1895 harvest.	31,973,052 bushels.
"	Quality compared with an average.	92 per cent.
BARLEY	— Estimated area for the harvest of 1895.	14,842 acres.
"	Product per acre estimated from threshers' returns.	23.7 bushels.
"	Total estimated product of 1895 harvest.	352,364 bushels.
"	Quality compared with an average.	92 per cent.
RYE	— Estimated area for the harvest of 1895.	38,430 acres.
"	Product per acre estimated from threshers' returns.	14.8 bushels.
"	Total estimated product for 1895 harvest.	569,987 bushels.
CORN	— Prospect compared with an average.	84 per cent.
POTATOES	— Probable total crop compared with an average.	60 "
TOBACCO	— Condition compared with an average.	63 "
PASTURES	— Condition compared with an average.	48 "
APPLES	— Prospect compared with an average.	68 "

This report of the crops given in bushels, especially wheat, verifies with a marked degree of certainty the correctness of the estimates made by our correspondents during the growing and through the harvest season. As the wheat neared the reaper's arrival these estimates of condition or prospect indicated that the crop would fall short of last year's product 40 or 50 per cent., and the figures now show that against last year's crop of nearly 51,000,000 bushels we have for the crop of 1895 a product of only 26,520,930 bushels.

It is true there was a short acreage seeded as compared with that seeded for last year's harvest, but it is also true that there is a shorter product per acre by 8.1 bushels. Last year we had the largest crop of wheat in the history of the State and this year we fall about 14,000,000

bushels below an average crop and 24,000,000 bushels below the crop of last year. As compared with last year there is a much less per cent. of the old crop remaining in producers' hands. This fact is presumably the result of increase in the price of wheat.

Oats has turned out a fairly good crop, not quite so large as last year, but much better than that of 1893 and very near a full average. Early in the season, reports on this crop were discouraging, but as the harvest approached, rapid improvement was made and the outcome is a crop of about 32,000,000 bushels with an average of 30.1 bushels per acre.

Corn is very unevenly distributed over the State. In some localities the product is from a fair to an average crop, while in many localities the product is very low, the average for the State being 16 per cent. short of a full crop.

Potatoes are a short crop and this is the third year in succession that this crop has produced only a little more than half of a fair average.

Apples, while almost a total failure in some few localities, are abundant in others, the average for the entire State being 68 per cent.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON
THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1895.

Counties.	Wheat.						
	Area Sown Last Fall for the Harvest of 1895.	Plowed Up This Spring.	Total Estimated Area Harvested in 1895.	Product per Acre Estimated from Threshers' ret'ns.	Total Estimated Product of 1895 Harvest.	Quality Compared with an Average.	Crop of 1894 Still in Producers' Hands.
	<i>Acres.</i>	<i>Per Ct.</i>	<i>Acres.</i>	<i>Bush.</i>	<i>Bush.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>
Adams	18,351	2	17,984	11	197,824	95	30
Allen	26,753	1	26,485	16	423,760	94	17
Ashland	33,230	2	32,565	12	390,780	80	9
Ashtabula	12,540	1	12,415	11	136,565	66	16
Athens	8,065	3	7,823	18	140,814	100	13
Auglaize	30,634	5	29,102	17	494,734	87	3
Belmont	22,162	1	21,940	11	241,340	87	6
Brown	28,543	..	28,543	11	313,973	92	10
Butler	47,498	2	46,528	12	548,336	82	2
Carroll	16,357	..	16,357	8	130,856	65	15
Champaign	47,039	4	45,157	10	451,570	93	2
Clark	33,786	4	32,435	10	324,350	79	36
Clermont	24,311	1	24,068	12	288,816	85	15
Clinton	35,336	3	34,276	8	274,208	89	13
Columbiana	18,136	1	17,955	8	143,640	71	24
Coshocton	23,387	6	21,984	9	197,856	81	11
Crawford	28,510	..	28,510	14	399,140	79	4
Cuyahoga	9,341	1	9,258	14	129,612	71	11
Darke	58,856	3	57,090	10	570,900	86	16
Defiance	26,000	..	26,000	16	376,000	94	4
Delaware	20,767	6	19,521	10	195,210	72	6
Erie	14,687	1	14,540	13	189,020	78	4
Fairfield	35,305	1	34,952	10	349,520	83	22
Fayette	26,282	6	24,505	12	294,060	85	2
Franklin	34,758	4	33,367	9	300,303	72	27
Fulton	34,019	..	34,019	18	272,152	86	7
Gallia	13,961	4	13,400	9	120,627	90	4
Geauga	6,111	..	6,111	10	61,110	61	5
Greene	39,381	1	38,987	14	545,818	78	7
Guernsey	13,265	..	13,265	9	119,395	89	6
Hamilton	15,645	..	15,645	12	187,740	87	2
Hancock	43,496	3	42,171	17	716,907	92	9
Hardin	30,405	2	29,791	13	387,283	88	22
Harrison	10,555	2	10,344	12	124,128	87	13
Henry	28,617	1	28,329	19	538,251	91	4
Highland	35,989	..	35,989	12	431,868	85	7
Hocking	10,153	2	9,950	9	89,550	95	5
Holmes	34,265	5	35,552	8	260,416	80	23
Huron	26,800	..	26,800	13	348,400	74	10
Jackson	7,390	..	7,390	14	103,460	94	18
Jefferson	19,407	5	18,437	10	184,370	79	7
Knox	29,783	1	29,485	9	265,365	63	8
Lake	4,081	7	3,795	13	49,335	84	6
Lawrence	8,806	3	8,542	13	111,046	84	3
Licking	37,284	2	36,538	9	328,842	78	12
Logan	26,290	3	25,501	11	280,511	82	18
Lorain	16,777	1	16,609	15	249,135	87	10
Lucas	15,615	..	15,615	19	296,685	89	7
Madison	27,406	9	24,939	10	249,390	65	10

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Wheat.						
	Area Sown Last Fall for the Harvest of 1895.	Plowed Up This Spring.	Total Estimated Area Harvested in 1895.	Product per Acre Estimated from Threshers' ret'ns.	Total Estimated Product of 1895 Harvest.	Quality Compared with an Average.	Crop of 1894 Still in Producers' Hands.
	<i>Acres.</i>	<i>Per Ct.</i>	<i>Acres.</i>	<i>Bush.</i>	<i>Bush.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>
Mahoning	12,801	1	12,673	9	114,057	74	8
Marion	25,433	6	23,907	11	262,977	75	16
Medina	19,677	6	18,496	14	258,944	85	6
Meigs	12,788	..	12,788	11	140,668	95	8
Mercer	39,273	..	39,273	12	78,546	86	2
Miami	41,105	2	40,283	9	362,547	78	14
Monroe	18,260	2	17,895	12	214,740	94	2
Montgomery	38,231	3	37,084	8	296,672	78	23
Morgan	9,540	1	9,445	17	66,115	96	7
Morrow	16,000	3	15,520	13	201,760	79	18
Muskingum	19,504	2	19,114	11	210,254	87	6
Noble	13,407	..	13,407	16	80,442	99	13
Ottawa	16,596	..	16,596	22	365,112	75	15
Paulding	15,921	..	15,921	19	302,499	101	4
Perry	13,448	1	13,274	15	199,110	93	13
Pickaway	53,501	3	51,896	12	622,752	86	11
Pike	13,675	2	13,402	10	134,020	88	27
Portage	20,263	10	18,237	9	164,133	70	9
Preble	41,384	..	41,384	11	455,224	82	5
Putnam	31,363	1	31,049	20	620,980	84	11
Richland	43,321	..	43,321	14	606,494	74	13
Ross	38,342	1	37,959	11	417,549	93	17
Sandusky	35,278	4	33,867	17	641,739	87	13
Scioto	13,184	..	13,184	10	131,840	81	3
Seneca	51,077	..	51,077	13	662,001	74	9
Shelby	34,265	1	33,922	10	339,220	79	5
Stark	39,569	3	38,380	9	345,420	70	5
Summit	24,382	5	23,160	11	254,793	81	19
Trumbull	10,718	5	10,182	10	101,820	51	10
Tuscarawas	26,602	2	26,070	13	338,910	88	6
Union	23,060	10	20,754	8	166,032	63	9
Van Wert	29,820	1	29,522	19	265,698	90	13
Vinton	7,040	1	6,970	10	69,700	89	....
Warren	37,091	1	36,725	13	477,425	88	3
Washington	26,455	1	26,190	16	419,040	99	21
Wayne	46,998	3	45,588	11	501,468	63	16
Williams	31,391	..	31,391	16	502,256	90	13
Wood	49,102	2	46,120	23	1,060,760	83	13
Wyandot	22,471	2	22,022	11	242,242	86	5
Averages .....	.....	2.4	.....	11.9	.....	81	11
Totals	2,278,431	..	2,225,534	..	26,520,930	..	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Oats.			
	Estimated Area for the Harvest of 1895.	Product per Acre Estimated from Threshers' Returns.	Total Estimated Product of 1895 Harvest.	Quality Compared with an Average.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Per Ct.</i>
Adams	2,432	23	55,936	95
Allen	9,938	29	268,326	95
Ashland	18,911	39	737,529	100
Ashtabula	15,031	37	556,147	101
Athens	2,149	18	38,682	105
Auglaize	11,255	40	450,200	98
Belmont	10,470	20	209,400	84
Brown	5,050	20	101,000	92
Butler	9,394	30	281,820	100
Carroll	14,278	25	356,950	88
Champaign	7,068	33	233,244	100
Clark	5,293	30	158,790	88
Clermont	7,170	25	179,250	95
Clinton	4,510	23	103,530	92
Columbiana	19,095	39	744,705	91
Coshocton	8,603	22	189,266	90
Crawford	19,738	48	947,424	98
Cuyahoga	14,003	38	532,114	90
Darke	19,631	27	530,037	95
Defiance	16,635	40	665,400	91
Delaware	7,696	30	230,880	92
Erie	12,261	35	429,135	99
Fairfield	3,687	25	92,175	78
Fayette	1,119	27	3,213	100
Franklin	6,416	26	166,816	93
Fulton	17,888	38	679,744	86
Gallia	3,011	16	48,176	80
Geauga	10,613	39	413,907	102
Greene	4,709	40	188,360	81
Guernsey	7,975	14	111,650	83
Hamilton	4,011	25	100,275	92
Hancock	12,890	32	412,480	96
Hardin	17,223	32	551,136	92
Harrison	7,088	28	198,464	93
Henry	8,651	41	354,691	96
Highland	2,587	18	46,566	79
Hocking	2,454	25	61,350	95
Holmes	16,684	25	417,100	100
Huron	26,734	34	908,956	96
Jackson	1,817	20	36,340	87
Jefferson	11,964	20	239,080	83
Knox	12,416	28	347,648	96
Lake	6,240	33	205,920	89
Lawrence	3,950	20	79,000	86
Licking	9,555	25	238,875	88
Logan	8,117	27	219,159	93
Lorain	19,254	42	808,668	100
Lucas	10,569	40	422,760	96
Madison	2,799	38	106,362	95

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Oats.			
	Estimated Area for the Harvest of 1895.	Product per Acre Estimated from Threshers' Returns.	Total Estimated Product of 1895 Harvest.	Quality Compared with an Average.
	<i>Acres.</i>	<i>Bushels</i>	<i>Bushels.</i>	<i>Per Ct.</i>
Mahoning	15,856	42	665,952	101
Marion	13,276	37	491,212	99
Medina	18,222	38	692,436	102
Meigs	2,282	20	45,640	75
Mercer	20,035	30	601,050	87
Miami	13,856	30	415,680	96
Monroe	8,164	12	97,968	80
Montgomery	12,763	23	293,549	90
Morgan	3,940	21	82,740	76
Morrow	14,017	41	574,697	100
Muskingum	7,234	18	130,212	80
Noble	5,439	24	130,536	93
Ottawa	7,370	40	294,800	100
Paulding	7,014	33	231,462	99
Perry	5,054	18	90,972	83
Pickaway	1,346	26	34,996	93
Pike	4,683	25	117,065	81
Portage	17,363	40	694,520	99
Preble	13,058	26	339,508	97
Putnam	4,859	35	169,965	95
Richland	25,335	37	937,395	98
Ross	2,723	21	57,183	93
Sandusky	14,112	41	578,592	100
Scioto	4,603	34	158,542	87
Seneca	19,829	34	674,186	91
Shelby	17,389	21	365,169	93
Stark	26,798	40	1,071,920	93
Summit	16,282	38	618,616	96
Trumbull	18,465	45	821,925	99
Tuscarawas	18,435	36	653,660	99
Union	7,107	29	206,103	97
Van Wert	11,878	39	463,242	98
Vinton	1,755	25	43,875	100
Warren	6,577	18	118,385	50
Washington	9,020	15	135,300	79
Wayne	24,856	46	1,143,376	100
Williams	22,275	30	668,250	100
Wood	26,925	43	1,258,775	94
Wyandot	11,756	37	434,972	99
Averages .....	.....	30.1	.....	92
Totals	964,032	.....	31,973,052	.....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Barley.			
	Estimated Area for the Harvest of 1895.	Product per Acre from Threshers' Reports.	Total Estimated Product of 1895 Harvest.	Quality Compared with an Average.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Per Ct.</i>
Adams	10	23	230	90
Allen	16	22	352	90
Ashland	188	22	4,136	67
Ashtabula	678	18	12,204	100
Athens	15	20	300	90
Auglaize	422	23	9,706	80
Belmont	32	20	640	100
Brown	20	20	400	95
Butler	1,599	30	47,970	88
Carroll	29	24	696	95
Champaign	10	25	250	98
Clark	59	20	1,180	100
Clermont	4	30	120	100
Clinton	79	22	1,738	93
Columbiana	36	20	720	95
Coshocton	2	25	50	90
Crawford	183	31	5,673	98
Cuyahoga	20	19	380	95
Darke	526	18	9,468	82
Defiance	217	17	3,689	90
Delaware	7	20	140	85
Erie	1,286	25	32,150	89
Fairfield	16	25	400	90
Fayette	26	19	494	90
Franklin	23	21	483	90
Fulton	325	30	9,750	100
Gallia	9	23	207	95
Geauga	13	20	260	100
Greene	80	30	2,400	90
Guernsey	16	20	320	95
Hamilton	296	25	7,400	75
Hancock	29	23	667	95
Hardin	25	21	525	90
Harrison	5	30	150	90
Henry	144	38	5,472	90
Highland	10	15	150	75
Hocking	11	18	198	90
Holmes	86	21	1,806	90
Huron	187	15	2,805	85
Jackson	2	25	50	100
Jefferson	75	25	1,875	90
Knox	18	15	270	85
Lake	172	16	2,752	83
Lawrence	11	19	209	83
Licking	23	14	322	85
Logan	128	13	1,664	83
Lorain	366	19	6,954	100
Lucas	547	24	13,128	100
Madison	11	21	231	50

OFFICIAL REPORT OF THE OHIO STATE BOARD OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Barley.			
	Estimated Area for the Harvest of 1895.	Product per Acre from Threshers' Returns.	Total Estimated Product of 1891 Harvest.	Quality Compared with an Average.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Per Ct.</i>
Mahoning	31	15	465	80
Marion	62	18	1,116	90
Medina	32	21	672	90
Meigs	48	18	864	95
Mercer	503	19	8,557	100
Miami	458	31	14,198	75
Monroe	2	22	44	100
Montgomery	545	16	8,720	90
Morgan .....	.....	.....	.....	..
Morrow	16	10	160	60
Muskingum	25	16	416	95
Noble .....	.....	.....	.....	..
Ottawa	1,620	30	48,600	90
Paulding	31	25	775	100
Perry	8	22	176	100
Pickaway	10	18	180	95
Pike	136	16	2,176	84
Portage	91	17	1,547	85
Preble	197	21	4,137	92
Putnam	81	24	1,944	95
Richland	199	32	6,368	90
Ross	23	18	414	100
Sandusky	335	20	6,700	100
Scioto	22	38	836	88
Seneca	62	20	1,240	90
Shelby	524	6	3,144	56
Stark	75	23	1,725	83
Summit	18	22	396	95
Trumbull	18	21	378	85
Tuscarawas	37	20	740	98
Union	5	16	80	82
Van Wert	180	35	6,300	90
Vinton	2	16	32	99
Warren	520	21	10,920	100
Washington	5	24	120	100
Wayne	48	25	1,200	90
Williams	108	25	2,700	100
Wood	645	30	19,350	100
Wyandot	28	30	840	97
Averages .....	.....	23.7	.....	92
Totals	14,842	.....	352,364	..

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Rye.			Corn.	Po- tatoes.	To- bacco.	Pas- tures.	Ap- ples.
	Estimated Area for the Harvest of 1895.	Product Per Acre from Threshers' Returns.	Total Estimated Product for 1895 Harvest.	Prospect Com- pared With an Average.	Probable Total Crop Compared With an Average.	Condition Com- pared With an Average.	Condition Com- pared With an Average.	Prospect Com- pared With an Average.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>
Adams	265	10	2,650	80	57	58	47	100
Allen	343	14	4,802	89	55	...	21	58
Ashland	148	14	2,072	98	93	73	79	47
Ashtabula	410	13	5,330	100	103	...	89	33
Athens	43	15	645	90	20	...	29	100
Auglaize	347	12	4,164	85	42	10	23	86
Belmont	139	10	1,390	81	21	71	20	63
Brown	964	13	12,532	73	50	57	65	100
Butler	355	12	4,260	68	28	70	33	87
Carroll	186	14	2,604	95	100	...	70	50
Champaign	351	12	4,212	63	48	...	18	78
Clark	830	13	10,790	75	57	70	43	100
Clermont	987	9	8,883	100	42	67	50	100
Clinton	170	10	1,700	100	52	45	55	100
Columbiana ..	243	7	1,701	111	101	...	6	19
Coshocton	207	7	1,449	92	69	...	76	82
Crawford	173	16	2,768	105	100	...	63	19
Cuyahoga	580	19	11,020	101	92	...	81	68
Darke	849	13	11,037	89	46	68	48	100
Defiance	364	27	9,828	94	64	80	58	67
Delaware	188	11	2,068	62	41	...	30	25
Erie	496	13	6,448	98	79	10	56	62
Fairfield	139	12	1,668	83	49	...	35	100
Fayette	322	30	9,660	78	23	...	8	100
Franklin	90	15	1,350	73	25	...	19	71
Fulton	664	16	10,624	81	78	...	52	38
Gallia	75	18	1,350	55	50	85	55	100
Geauga	65	19	1,235	98	98	...	100	59
Greene	479	12	5,748	74	42	50	17	93
Guernsey	338	9	3,042	88	26	20	63	86
Hamilton	806	11	8,866	65	50	80	22	70
Hancock	968	16	15,488	100	66	...	67	78
Hardin	933	11	10,263	87	64	...	34	57
Harrison	56	9	504	86	50	...	43	48
Henry	3,512	21	73,752	87	40	...	44	91
Highland	282	13	3,666	84	58	64	32	100
Hocking	71	15	1,065	95	60	...	20	100
Holmes	492	8	3,936	95	90	80	85	70
Huron	196	18	3,528	100	92	...	43	44
Jackson .....	...	...	...	61	46	...	36	81
Jefferson	36	11	396	91	64	...	68	40
Knox	347	10	3,470	91	76	...	86	49
Lake	551	13	7,163	100	96	100	88	38
Lawrence	155	12	1,860	86	50	67	46	93
Licking	334	13	4,342	80	53	...	75	80
Logan	330	10	3,300	73	39	...	31	72
Lorain	205	11	2,255	99	91	...	79	14
Lucas	1,398	18	25,164	79	68	...	46	22
Madison	423	13	5,499	88	57	...	20	68

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Rye.			Corn.	Po- tatoes.	To- bacco.	Pas- tures.	Ap- ples.
	Estimated Area for the Harvest of 1895.	Product Per Acre From Threshers' Returns.	Total Estimated Product for 1895 Harvest.	Prospect Com- pared With an Average.	Probable Total Crop Compared With an Average.	Condition Com- pared With an Average.	Condition Com- pared With an Average.	Prospect Com- pared With an Average.
	Acres.	Bushels.	Bushels.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.
Mahoning	337	7	2,359	96	73	...	54	8
Marion	225	10	2,250	100	77	...	59	55
Medina	47	16	752	100	89	90	65	39
Meigs	34	25	850	48	30	...	28	100
Mercer	746	23	17,158	92	47	...	48	48
Miami	204	15	3,060	66	50	67	26	94
Monroe	216	20	4,320	71	20	57	55	90
Montgomery ..	473	14	6,622	73	38	55	20	100
Morgan	83	16	1,328	87	45	33	51	95
Morrow	672	14	9,408	100	89	100	73	71
Muskingum ..	1,319	11	14,509	81	42	25	59	88
Noble	69	13	897	81	29	75	34	100
Ottawa	388	18	6,984	95	70	...	75	75
Paulding	830	16	13,280	95	53	...	27	53
Perry	156	15	2,340	83	48	100	48	88
Pickaway	146	15	2,190	57	26	...	19	96
Pike	2	9	18	48	36	70	16	100
Portage	152	12	1,824	101	95	...	76	14
Preble	292	11	3,212	83	73	72	42	100
Putnam	1,398	18	25,164	91	58	...	23	37
Richland	570	12	6,840	100	81	...	51	70
Ross	184	15	2,760	58	20	...	11	100
Sandusky	630	15	9,450	90	70	...	45	19
Scioto	80	18	1,440	54	50	47	28	66
Seneca	433	10	4,330	99	79	...	49	71
Shelby	297	9	2,673	77	52	65	26	100
Stark	187	12	2,244	95	85	80	64	20
Summit	139	14	1,946	100	89	...	88	49
Trumbull	134	10	1,340	91	86	...	55	3
Tuscarawas ...	183	10	1,830	100	81	...	78	63
Union	428	14	5,992	84	37	...	28	20
Van Wert	2,286	13	29,718	100	40	...	44	43
Vinton	77	14	1,078	60	35	...	20	100
Warren	479	15	7,185	100	68	100	50	85
Washington ..	161	15	2,415	89	36	47	32	100
Wayne	145	8	1,160	96	90	93	68	52
Williams	230	12	2,760	85	88	...	73	90
Wood	1,747	23	40,181	86	41	...	42	62
Wyandot	356	16	5,696	100	100	11	55	52
Averages ....	.....	14.8	.. ..	84	60	63	48	68
Totals	38,430	....	569,987	...	...	...	..	...

ACREAGE, PRODUCT AND CONDITION OF CROPS, NOVEMBER 1, 1895.

The following estimates are compiled from reports received from the regular crop correspondents of the Department. Acreage of winter crops is based on a percentage comparison with area seeded last fall:

WHEAT—Area sown last fall.	2,278,431 acres.
“ Sown this fall compared with last year.....	99 per cent.
“ Total estimated area sown for harvest of 1896....	2,251,043 acres.
“ Condition compared with an average.....	55 per cent.
“ Average date of seeding.....	September 23.
BARLEY—Area sown last fall.....	14,843 acres.
“ Area sown this fall compared with last year.....	98 per cent.
“ Total estimated area for harvest of 1896.....	14,400 acres.
“ Condition compared with an average.....	69 per cent.
RYE—Area sown last fall.....	38,430 acres.
“ Area sown this fall compared with last year.....	97 per cent.
“ Total estimated area for harvest of 1896.....	37,311 acres.
CORN—Prospect compared with an average.....	86 per cent.
BUCKWHEAT—Prospect compared with an average.....	69 “
CLOVER SEED—Prospect compared with an average.....	60 “
POTATOES—Estimated area	144,253 acres.
“ Average product per acre.....	73.5 bushels.
“ Total estimated product.	10,607,775 bushels.
“ Affected by rot... ..	1 per cent.
APPLES—Product compared with an average.....	71 “
HOGS—Condition compared with an average.....	94 “
“ Number to be fattened compared with last year... ..	88 “
COMMERCIAL FERTILIZERS—Farmers using on wheat ...	39 “

The area of winter wheat sown this fall for the harvest of next year is about the same as that sown last fall, being but 1 per cent. less. The present condition of the plant is very low, being but 55 per cent. of a fair average. The condition of soil at time of seeding was bad in fourteen counties of the State; only fair in thirty-nine counties and good in thirty-five counties. General drouth following wheat seeding is the cause of present low condition. Many fields are reported as not up, and much that is up seems to be making little or no growth, and is weak and thin on the ground. Many fields are brown and spotted. These conditions seem to be quite general, estimates ranging from 33 per cent. to 90 per cent., well tiled lands showing the higher estimates.

The acreage of barley and rye is but slightly decreased as compared with last year.

This is the first report of the year estimating the potato product in bushels. The average product per acre, while showing an increase over the very short product for the years 1893 and 1894, is still below an average for the State.

The crop of clover seed is short and very unevenly distributed over the State, ranging from 25 per cent. to upward of a fair average crop. There is a great scarcity of water; streams and wells are going dry and stock is suffering in consequence; pastures are so short that many farmers are feeding stock from the winter's supply.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON
THE ACREAGE, PRODUCT AND CONDITION OF CROPS, NOV. 1, 1895.

Counties.	Wheat.					
	Area Sown Last Fall.	Area Sown This Fall Compared With Last Year.	Total Estimated Area Sown for Harvest of 1896.	Condition Compared With an Average.	When Sown, Days After Sept. 1.	Condition of Soil at Time of Seeding.
	Acres.	Per Cent.	Acres.	Per Cent.	Days.	Condition.
Adams	18,351	96	17,617	36	49	Bad.
Allen	26,753	101	27,021	50	49	Fair.
Ashland	33,230	100	33,230	75	20	"
Ashtabula	12,540	95	11,913	87	19	Good.
Athens	8,065	98	7,804	63	25	Fair.
Auglaize	30,634	96	29,412	70	25	Bad.
Belmont	22,162	103	22,827	60	21	Fair.
Brown	28,543	99	28,257	40	38	"
Butler	47,498	90	42,748	39	31	Bad.
Carroll	16,357	105	17,175	81	17	Fair.
Champaign	47,039	100	47,039	40	25	Bad.
Clark	33,786	98	33,110	67	27	Fair.
Clermont	24,311	91	22,123	35	41	Bad.
Clinton	35,336	95	33,569	33	37	Good.
Columbiana	18,136	101	18,317	87	18	"
Coshocton	23,387	101	23,621	58	20	"
Crawford	28,510	98	27,940	73	18	Bad.
Cuyahoga	9,341	102	9,528	95	17	Good.
Darke	58,856	98	57,679	58	18	"
Defiance	26,000	105	27,300	60	20	Fair.
Delaware	20,767	98	20,352	73	28	Good.
Erie	14,687	97	14,246	78	18	"
Fairfield	35,305	95	33,540	52	27	Bad.
Fayette	26,282	93	24,442	70	27	Fair.
Franklin	34,758	95	33,020	57	26	Good.
Fulton	34,019	105	35,720	76	19	Fair.
Gallia	13,961	107	14,938	70	40	"
Geauga	6,111	104	6,356	97	12	Good.
Greene	39,381	95	37,402	35	34	Fair.
Guernsey	13,265	104	13,796	58	18	Good.
Hamilton	15,645	92	14,393	25	45	Bad.
Hancock	43,496	103	44,801	74	23	Fair.
Hardin	30,405	99	30,101	64	27	Good.
Harrison	10,555	99	10,449	69	17	Fair.
Henry	28,617	110	31,479	56	21	"
Highland	35,989	95	34,190	85	44	Bad.
Hocking	10,153	110	11,168	57	30	Fair.
Holmes	34,265	105	35,978	77	20	"
Huron	26,800	101	27,068	69	19	"
Jackson	7,390	103	7,612	53	44	Bad.
Jefferson	19,407	101	19,601	73	15	Fair.
Knox	29,783	106	31,570	75	19	"
Lake	4,081	100	4,081	85	17	Good.
Lawrence	8,806	98	8,630	56	39	Fair.
Licking	37,284	93	34,674	70	22	Good.
Logan	26,290	97	25,501	35	18	Fair.
Lorain	16,777	99	16,609	73	17	"
Lucas	15,615	106	16,552	83	15	Good.
Madison	27,406	94	25,762	62	27	Fair.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Wheat.					
	Area Sown Last Fall.	Area Sown This Fall Compared With Last Year.	Total Estimated Area Sown for Harvest of 1896.	Condition Compared With an Average.	When Sown, Days After Sept. 1.	Condition of Soil at Time of Seeding.
	<i>Acres.</i>	<i>Per Cent.</i>	<i>Acres.</i>	<i>Per Cent.</i>	<i>Days.</i>	<i>Condition.</i>
Mahoning	12,801	94	12,033	72	15	Fair.
Marion	25,433	96	24,415	75	23	"
Medina	19,677	97	19,087	71	17	"
Meigs	12,788	101	12,916	41	37	"
Meeker	39,273	101	39,666	70	20	Good.
Miami	41,105	98	40,283	68	22	"
Monroe	18,260	110	20,086	58	22	Fair.
Montgomery	38,231	97	37,084	47	30	Good.
Morgan	9,540	107	10,208	65	27	"
Morrow	16,000	98	15,580	82	18	"
Muskingum	19,504	110	21,454	78	21	"
Noble	13,407	108	14,480	57	27	Fair.
Ottawa	16,596	95	15,766	53	18	"
Paulding	15,921	101	16,080	43	26	"
Perry	13,408	100	13,408	57	21	"
Pickaway	53,501	95	50,836	36	31	Good.
Pike	13,675	105	14,359	50	43	"
Portage	20,263	98	19,857	78	18	"
Preble	41,384	98	40,556	58	29	Bad.
Putnam	31,363	100	31,363	51	21	Good.
Richland	43,321	96	41,588	55	18	Fair.
Ross	38,342	98	37,575	40	36	Good.
Sandusky	35,278	96	33,867	70	18	Fair.
Scioto	13,184	97	12,788	50	40	Good.
Seneca	51,077	99	50,566	67	21	"
Shelby	34,265	100	34,265	58	18	"
Stark	39,569	98	38,788	75	14	"
Summit	24,382	97	23,650	68	18	"
Trumbull	10,718	100	10,718	77	15	"
Tuscarawas	26,602	101	26,868	75	20	Fair.
Union	23,060	96	22,138	52	34	Bad.
Van Wert	29,820	98	29,224	62	23	Fair.
Vinton	7,040	100	7,040	35	32	Bad.
Warren	37,091	96	35,607	35	38	"
Washington	26,455	108	28,571	42	33	Good.
Wayne	46,998	95	44,649	81	20	"
Williams	31,391	98	30,683	64	16	"
Wood	49,102	100	49,102	61	21	Fair.
Wyandot	22,471	96	21,576	76	24	"
Averages .....	.....	99	.....	55	Sept. 23	
Totals	2,278,431	.....	2,251,043	.....	.....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Barley.			
	Area Sown Last Fall.	Area Sown This Fall, Compared with Last Year.	Total Estimated Area for Harvest of 1896.	Condition Compared with an Average.
	Acres.	Per Cent.	Acres.	Per Ct.
Adams	10	90	9	90
Allen	16	100	16	55
Ashland	188	77	145	70
Ashtabula	678	80	542	95
Athens	15	100	15	65
Auglaize	422	95	401	70
Belmont	32	100	32	70
Brown	20	100	20	50
Butler	1,599	95	1,569	43
Carroll	29	100	29	81
Champaign	10	100	10	50
Clark	59	80	47	60
Clermont	4	100	4	45
Clinton	79	82	65	50
Columbiana	36	100	36	50
Coshocton	2	100	2	60
Crawford	183	96	176	100
Cuyahoga	20	100	20	95
Darke	526	97	510	41
Defiance	217	100	217	60
Delaware	7	100	7	75
Erie	1,286	100	1,286	100
Fairfield	16	105	17	75
Fayette	26	100	26	75
Franklin	23	100	23	60
Fulton	325	100	325	100
Gallia	9	100	9	75
Geauga	13	100	13	90
Greene	80	100	80	50
Guernsey	16	100	16	65
Hamilton	296	100	296	40
Hancock	29	96	27	80
Hardin	25	100	25	70
Harrison	5	100	5	100
Henry	144	100	144	60
Highland	10	100	10	50
Hocking	11	100	11	60
Holmes	86	100	86	80
Huron	187	100	187	90
Jackson	2	100	2	75
Jefferson	75	100	75	87
Knox	18	100	18	90
Lake	172	100	172	90
Lawrence	11	100	11	45
Licking	23	100	23	70
Logan	128	97	124	90
Lorain	366	100	366	75
Lucas	547	100	547	70
Madison	11	100	11	70

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Barley.			
	Area Sown Last Fall.	Area Sown This Fall, Compared with Last Year.	Total Estimated Area for Harvest of 1896.	Condition Compared with an Average.
	<i>Acres.</i>	<i>Per Cent.</i>	<i>Acres.</i>	<i>Per Ct.</i>
Mahoning	31	100.	31	73
Marion	62	100	62	75
Medina	32	100	32	100
Meigs	48	100	48	55
Mercer	503	98	493	65
Miami	458	100	458	68
Monroe	2	100	2	53
Montgomery	545	100	545	50
Morgan .....	.....	...	.....	..
Morrow	16	100	16	75
Muskingum	25	100	25	75
Noble .....	.....	...	.....	..
Ottawa	1,620	95	1,539	60
Paulding	31	100	31	50
Perry	8	100	8	60
Pickaway	10	100	10	40
Pike	136	100	136	50
Portage	91	100	91	78
Preble	197	95	187	80
Putnam	81	100	81	40
Richland	199	100	199	55
Ross	23	100	23	50
Sandusky	335	98	328	70
Scioto	22	98	22	55
Seneca	62	100	62	60
Shelby	524	100	524	61
Stark	75	100	75	70
Summit	18	100	18	90
Trumbull	18	100	18	75
Tuscarawas	37	100	37	80
Union	5	100	5	60
Van Wert	180	100	180	65
Vinton	2	100	2	50
Warren	520	98	510	55
Washington	5	100	5	50
Wayne	48	100	48	85
Williams	108	100	108	77
Wood	645	94	606	75
Wyandot	28	100	28	87
Averages .....	.....	98	.....	69
Totals	14,843	...	14,400	..

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Rye.			Corn.	Buck- wheat.	Clover Seed.
	Area Sown Last Fall.	Area Sown This Fall Compared with Last Year.	Total Estimated Area for Har- vest of 1896.	Prospect Com- pared with an Average.	Prospect Com- pared with an Average.	Prospect Com- pared with an Average.
	<i>Acres.</i>	<i>Per Cent.</i>	<i>Acres.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>
Adams	265	95	252	85	.....	60
Allen	343	100	343	98	.....	59
Ashland	148	98	145	100	87	87
Ashtabula	410	96	394	97	100	63
Athens	43	100	43	90	...	20
Auglaize	347	98	340	80	95	40
Belmont	139	108	146	84	53	25
Brown	964	100	964	78	.....	60
Butler	355	105	383	77	.....	84
Carroll	186	100	196	99	100	37
Champaign	351	100	351	45	.....	50
Clark	830	105	872	73	60	62
Clermont	987	93	918	91	92	75
Clinton	170	89	151	99	37	97
Columbiana	243	190	243	106	100	68
Coshocton	207	100	207	92	85	65
Crawford	173	100	173	104	90	100
Cuyahoga	580	100	580	100	80	70
Darke	849	100	849	78	60	60
Defiance	364	100	364	101	55	56
Delaware	188	99	186	79	27	62
Eric	496	102	506	95	89	77
Fairfield	139	97	131	79	66	61
Fayette	322	90	290	82	.....	95
Franklin	90	95	86	68	43	63
Fulton	664	105	697	85	51	42
Gallia	75	100	75	78	.....	.....
Geauga	65	110	72	105	100	93
Greene	479	95	455	74	.....	96
Guernsey	338	110	372	83	60	59
Hamilton	806	100	806	65	100	90
Hancock	968	94	910	102	43	20
Hardin	933	102	552	93	50	17
Harrison	56	107	60	99	79	31
Henry	3,512	98	3,442	85	80	59
Highland	282	95	268	79	.....	91
Hocking	71	110	78	95	80	82
Holmes	492	100	492	85	95	95
Huron	196	103	202	101	78	91
Jackson .....	.....	.....	.....	50	60	85
Jefferson	36	100	36	92	52	28
Knox	347	98	340	96	60	79
Lake	551	92	517	100	85	50
Lawrence	155	85	132	92	60	75
Licking	334	104	347	84	58	63
Logan	330	100	330	68	55	26
Lorain	205	101	207	100	83	70
Lucas	1,398	100	1,398	94	77	31
Madison	423	93	393	83	88	104

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Rye.			Corn.	Buck- wheat.	Clover Seed.
	Area Sown Last Fall.	Area Sown This Fall Compared with Last Year.	Total Estimated Area for Har- vest of 1896.	Prospect Com- pared with an Average.	Prospect Com- pared with an Average.	Prospect Com- pared with an Average.
	<i>Acres.</i>	<i>Per Cent.</i>	<i>Acres.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>
Mahoning	337	97	327	93	90	31
Marion	225	98	221	101	...	85
Medina	47	100	52	101	80	29
Meigs	34	100	34	75	80	28
Mercer	746	100	746	76	...	23
Miami	204	97	198	70	70	61
Monroe	216	110	238	78	60	38
Montgomery	473	98	464	78	...	60
Morgan	83	99	82	88	59	44
Morrow	672	95	638	100	69	84
Muskingum	1,319	107	1,411	95	63	73
Noble	69	100	69	80	40	...
Ottawa	388	100	388	105	50	63
Paulding	830	100	830	80	64	32
Perry	156	100	156	83	59	34
Pickaway	146	89	130	62	...	50
Pike	2	100	2	65	29	75
Portage	152	110	167	100	96	31
Preble	292	105	307	87	68	92
Putnam	1,398	75	1,049	98	48	41
Richland	570	98	559	98	58	43
Ross	184	105	193	61	...	79
Sandusky	630	98	617	90	...	53
Scioto	80	100	80	70	50	80
Seneca	433	100	433	98	100	67
Shelby	297	101	300	78	44	35
Stark	187	105	196	100	89	56
Summit	139	100	139	94	67	33
Trumbull	134	100	134	100	98	58
Tuscarawas	183	99	181	102	83	49
Union	428	100	428	93	...	57
Van Wert	2,286	95	2,172	99	41	30
Vinton	77	110	85	72	70	62
Warren	479	90	431	100	25	100
Washington	161	101	163	89	30	42
Wayne	145	100	145	100	90	99
Williams	230	105	242	85	67	34
Wood	1,747	95	1,660	89	37	39
Wyandot	356	101	360	105	87	98
Averages .....	.....	97	.....	86	69	60
Totals	38,430	.....	37,311	.....	.....	.....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Potatoes.				Ap- ples.	Hogs		Commercial Fertilizers — Farmers Using on Wheat.
	Estimated Area.	Average Product per Acre.	Total Estimated Product.	Affected by Rot.	Product Compared with an Average.	Condition Comp'd with an Average.	Number to be Fat- tened Compared with 1894.	
	Acres.	Bush.	Bushels.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.
Adams	249	24	5,976	1	102	97	88	96
Allen	1,079	54	58,266	1	64	97	88	9
Ashland	1,295	106	137,270	1	45	99	89	49
Ashtabula	3,623	124	449,252	4	44	100	96	70
Athens	1,005	40	40,200	....	102	100	68	85
Auglaize	1,240	37	45,880	....	75	95	82	1
Belmont	1,795	28	50,260	....	60	91	88	31
Brown	980	34	33,320	2	103	96	82	65
Butler	1,773	66	117,018	....	98	93	87	11
Carroll	787	124	97,588	4	29	94	85	51
Champaign	1,202	60	72,120	2	90	100	90	2
Clark	1,573	56	88,088	....	104	92	86	11
Clermont	1,691	47	79,477	1	100	93	95	47
Clinton	3,303	47	155,241	2	104	84	77	35
Columbiana	2,174	97	210,878	3	20	89	91	58
Coshocton	1,305	61	79,605	1	71	91	80	44
Crawford	1,385	149	206,365	3	56	95	91	29
Cuyahoga	6,090	100	609,000	....	67	97	99	84
Darke	2,523	48	121,104	....	105	91	96	8
Defiance	1,134	60	68,040	1	87	102	95	....
Delaware	957	38	36,366	8	21	89	86	41
Erie	3,018	110	331,980	....	70	99	95	16
Fairfield	1,686	42	70,812	3	102	86	73	41
Fayette	207	30	6,210	....	103	93	92	19
Franklin	3,735	27	100,845	1	75	100	86	12
Fulton	1,346	110	148,060	2	53	96	74	4
Gallia	604	47	28,388	3	103	90	85	67
Geauga	2,312	150	346,800	1	20	100	89	88
Greene	1,044	35	86,540	....	102	89	70	6
Guernsey	626	33	20,658	....	98	93	78	67
Hamilton	5,236	88	460,768	2	105	57	60	2
Hancock	1,406	83	116,698	2	78	92	86	10
Hardin	2,762	57	157,434	....	63	95	100	2
Harrison	431	53	22,843	3	51	93	86	37
Henry	1,246	49	61,054	1	72	95	95	2
Highland	370	36	13,320	3	102	96	85	85
Hocking	846	50	42,300	....	105	100	95	95
Holmes	1,037	100	103,700	3	60	100	92	32
Huron	1,683	125	210,375	1	50	98	92	60
Jackson	191	37	7,067	3	100	97	100	88
Jefferson	2,079	52	108,108	....	36	98	73	64
Knox	877	86	75,422	....	51	99	94	47
Lake	1,013	150	151,950	1	49	100	98	58
Lawrence	485	57	27,645	3	93	85	86	28
Licking	1,726	60	103,560	1	50	98	86	36
Logan	807	27	21,780	....	77	96	83	4
Lorain	1,941	89	172,749	2	22	94	91	68
Lucas	3,473	83	288,259	....	44	100	89	3
Madison	459	42	19,278	1	86	84	79	1

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Potatoes.				Ap- ples.	Hogs.		Commercial Fertilizers — Farmers Using on Wheat.
	Estimated Area.	Average Product per Acre.	Total Estimated Product.	Affected by Rot.	Product Compared with an Average.	Condition Comp'd with an Average.	Number to be Fat- tened Compared with 1894.	
	Acres.	Bush.	Bushels.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.
Mahoning	3,618	89	322,002	....	15	98	100	64
Marion	1,295	73	94,535	....	18	90	83	1
Medina	1,782	89	158,598	....	30	94	94	79
Meigs	1,338	36	48,168	3	105	95	86	73
Mercer	850	51	43,350	....	43	100	90	1
Miami	2,257	56	126,392	4	98	99	96	80
Monroe	1,433	29	41,557	....	100	92	72	83
Montgomery	1,757	32	56,224	....	100	100	93	28
Morgan	726	45	32,670	1	105	91	80	74
Morrow	1,505	99	148,995	1	65	99	88	37
Muskingum	1,615	43	69,445	3	92	98	92	75
Noble	765	30	22,950	4	99	95	81	65
Ottawa	769	50	38,450	....	93	90	95	....
Paulding	714	43	30,702	2	43	95	91	2
Perry	730	70	51,100	1	102	93	85	97
Pickaway	1,108	22	24,376	1	105	86	86	33
Pike	515	33	16,995	3	100	88	75	45
Portage	5,366	105	563,430	....	24	96	98	73
Preble	768	58	44,544	....	103	92	97	85
Putnam	3,229	68	219,572	4	38	91	84	....
Richland	2,070	70	144,900	3	10	90	95	63
Ross	1,960	24	47,040	1	105	88	76	22
Sandusky	2,389	40	95,560	....	53	88	90	....
Scioto	1,039	40	41,560	3	105	95	67	27
Seneca	1,957	64	125,248	2	44	92	93	64
Shelby	972	48	46,656	....	106	97	83	21
Stark	2,897	120	347,640	2	28	98	91	41
Summit	2,494	91	226,954	....	43	88	88	29
Trumbull	3,154	110	846,940	....	37	100	94	75
Tuscarawas	2,141	101	216,241	1	74	96	101	18
Union	634	27	17,118	....	21	97	77	15
Van Wert	1,011	43	43,473	2	38	96	88	....
Vinton	405	48	19,440	....	108	100	92	88
Warren	883	62	54,746	2	105	95	94	39
Washington	2,594	37	95,978	2	105	100	81	76
Wayne	2,397	119	285,243	2	35	95	94	62
Williams	1,037	97	100,589	1	59	94	85	1
Wood	1,331	49	65,219	3	78	96	91	5
Wyandot	969	121	117,249	2	54	86	90	6
Averages .....	....	73.5	....	1	71	94	88	39
Totals	144,253	....	10,607,775	....	....	....	....	....

ACREAGE, PRODUCT AND CONDITION OF CROPS, DECEMBER 1, 1895.

The following report on the condition of crops December 1, represents the estimates as computed from the returns received from the regular township correspondents of the Department:

WHEAT—Condition compared with an average.....	61 per cent.
“ Crop of 1895 sold as soon as threshed.....	40 “
“ Damage to growing crop by Hessian fly....	4 “
“ Damage to growing crop by white grub worm.	1 “
CORN—Estimated area planted in 1895.....	2,853,535 acres.
“ Estimated average yield per acre.....	33.9 bushels.
“ Estimated total bushels produced	96,263,789 bushels.
“ Cut up for fodder	90 per cent.
“ Put into silo	4 “
“ Average date of cutting for fodder	September 17.
“ Average date cribbing began	October 16.
CLOVER SEED—Probable total yield compared with average.	52 per cent.
APPLES—Probable yield compared with an average.....	71 “
TOBACCO—Estimated average product per acre.....	655 pounds.
CATTLE—Being fed for spring market compared with last year	73 per cent.
SHEEP—Being fed for mutton compared with last year..	72 “

The present condition of winter wheat is not such as to cause perfect confidence for its safety during the winter. By reason of the long continued drouth following seeding, the plant did not get proper start and the recent rains came too late to bring it up to a vigorous and healthy growth. The rains being followed by raw, cold weather, has not tended to materially benefit the wheat, although there is a slight improvement as compared with condition November 1. The most improvement is shown in the southern part of the State. For the State in general the wheat plant is small and weak of growth and will go into winter in a condition that will not enable the plant to withstand severe freezes or frequent thaws. The Hessian fly is reported to a greater or less degree in most of the counties of the State, the average injury being estimated at four per cent.

The present corn crop has turned out much better than was anticipated early in the growing season. The area is about 25,000 acres in excess of last year and the product estimated from returns shows well. The estimate is undoubtedly high. Many correspondents in making returns no doubt estimated bushels of ears, but the crop being so unevenly distributed over the State, it has been difficult to determine in every case the basis of their estimates. It is probably fair to assume that the crop will reach, on a strictly shelled corn basis, from 85,000,000 to 90,000,000 bushels.

The crop of clover seed is very short; in some counties it is almost an entire failure.

Hog cholera is reported from some of the northeastern counties.

The severe wind storm on the night of November 25 did much damage in the way of unroofing barns and other buildings, and in scattering badly the corn fodder. Many hay and straw stacks were blown down.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON
THE ACREAGE, PRODUCT AND CONDITION OF CROPS, DEC. 1, 1895.

Counties.	Wheat.			
	Condition Compared with an Average.	Crop of 1895 Sold as Soon as Threshed.	Damage to Growing Crop by Hessian Fly.	Damage to Grow'g Crop by White Grub Worm.
	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Per Ct.</i>
Adams	65	23	2	..
Allen	73	38	10	1
Ashland	79	16	5	4
Ashtabula	94	25	..	3
Athens	75	35	..	..
Auglaize	70	55	4	..
Belmont	77	38	2	3
Brown	54	36	..	1
Butler	53	34	..	..
Carroll	93	25	2	..
Champaign	80	45	2	..
Clark	81	48	2	..
Clermont	60	35	5	..
Clinton	77	52	2	2
Columbiana	79	29	4	2
Coshocton	58	29	5	1
Crawford	73	32	5	..
Cuyahoga	79	38	5	2
Darke	64	56	3	1
Defiance	81	45	1	..
Delaware	67	23	3	..
Erie	80	53	5	1
Fairfield	63	43	5	..
Fayette	83	77	10	..
Franklin	71	49	5	1
Fulton	78	45	..	..
Gallia	77	46	3	..
Geauga	85	10	5	1
Greene	55	46	3	..
Guernsey	67	33	6	..
Hamilton	50	25	3	..
Hancock	80	27	1	..
Hardin	69	61	2	..
Harrison	68	21	2	1
Henry	65	51	1	..
Highland	56	29	3	1
Hocking	75	20	..	..
Holmes	88	10	5	1
Huron	74	39	7	..
Jackson	63	45	7	..
Jefferson	69	11	3	..
Knox	77	25	3	..
Lake	75	35	2	1
Lawrence	60	59	2	..
Licking	76	37	4	..
Logan	60	48	2	1
Lorain	77	43	3	..
Lucas	80	54	3	..
Madison	65	83	6	..

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, Etc.
CONTINUED.

Counties.	Wheat.			
	Condition Compared with an Average.	Crop of 1896 Sold as Soon as Threshed.	Damage to Growing Crop by Hessian Fly.	Damage to Grow'g Crop by White Grub Worm.
	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Per Ct.</i>
Mahoning	71	31	7	3
Marion	83	66	3	..
Medina	73	26	3	1
Meigs	67	41	..	1
Mercer	80	50	5	1
Miami	73	41	1	1
Monroe	71	34	3	2
Montgomery	63	35	..	..
Morgan	79	46	3	..
Morrow	83	30	6	2
Muskingum	75	29	3	..
Noble	71	26	3	1
Ottawa	45	60	..	..
Paulding	58	50	3	..
Perry	61	49	3	1
Pickaway	71	63	5	..
Pike	57	23	2	..
Portage	71	27	3	..
Preble	80	55	6	5
Putnam	66	68	3	1
Richland	87	37	..	..
Ross	70	50	5	1
Sandusky	74	28	4	..
Scioto	67	65	6	1
Seneca	77	41	6	..
Shelby	68	63	1	2
Stark	83	29	5	1
Summit	82	35	6	2
Trumbull	74	21	5	1
Tuscarawas	85	37	3	..
Union	55	60	..	..
Van Wert	71	37	2	..
Vinton	56	22	5	2
Warren	57	52	6	..
Washington	62	26	2	..
Wayne	86	25	6	3
Williams	70	65	5	..
Wood	78	43	5	2
Wyandot	76	35	3	1
Averages	61	40	4	1

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Corn.						
	Estimated Area Planted in 1895.	Estimated Average Yield per Acre.	Estimated Total Bushels Pro- duced.	Cut Up for Fodder.	Put Into Silo.	Date of Cutting for Fodder — Days After Sept. 1.	Date Cribbing Be- gan — Days After Oct. 1.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Days.</i>	<i>Days.</i>
Adams	35,426	23	814,798	91	15	21	22
Allen	34,426	35	1,204,910	73	2	23	12
Ashland	25,162	40	1,006,480	99	1	20	16
Ashtabula	9,715	40	388,600	78	13	19	8
Athens	17,683	37	654,271	100	6	23	18
Auglaize	36,792	34	1,250,928	95	..	13	11
Belmont	25,292	36	910,512	95	9	22	22
Brown	43,277	35	1,514,695	75	10	28	29
Butler	56,962	30	1,708,860	51	1	21	20
Carroll	14,393	34	489,364	100	..	24	25
Champaign	50,969	30	1,529,070	96	3	16	14
Clark	46,802	31	1,450,862	97	4	14	13
Clermont	34,342	32	1,098,944	83	6	17	18
Clinton	49,692	36	1,788,912	82	..	16	20
Columbiana	18,671	40	746,840	97	7	23	15
Coshocton	25,431	41	1,042,671	100	..	19	18
Crawford	35,121	40	1,404,840	98	..	13	13
Cuyahoga	10,186	41	417,626	78	30	14	15
Darke	73,605	33	2,428,965	80	1	13	16
Defiance	24,276	40	971,040	99	..	6	8
Delaware	32,422	30	972,660	100	5	11	11
Erie	17,038	36	613,368	46	3	13	14
Fairfield	49,304	33	1,627,032	95	..	20	21
Fayette	50,708	32	1,622,656	90	..	22	20
Franklin	59,608	34	2,026,672	89	5	16	17
Fulton	25,965	36	934,740	92	4	10	19
Gallia	23,110	23	531,530	94	..	7	13
Geauga	7,783	45	350,235	82	4	20	1
Greene	54,098	34	1,839,332	88	10	17	16
Guernsey	1,794	34	60,996	87	6	17	12
Hamilton	16,233	30	486,990	56	..	39	22
Hancock	50,252	40	2,010,080	98	..	9	12
Hardin	35,630	36	1,282,680	94	1	19	22
Harrison	13,809	38	524,742	84	13	19	16
Henry	41,340	39	1,612,260	92	..	13	11
Highland	48,417	24	1,162,008	68	10	20	31
Hocking	14,709	37	544,233	100	5	30	20
Holmes	23,815	38	904,970	99	..	23	13
Huron	26,298	45	1,183,410	94	3	10	7
Jackson	13,566	19	257,754	93	..	24	20
Jefferson	13,731	37	508,047	99	5	22	12
Knox	32,741	36	1,178,676	99	..	16	8
Lake	3,455	36	124,380	93	4	25	19
Lawrence	21,543	28	603,204	96	..	22	31
Licking	52,425	29	1,520,325	97	1	14	12
Logan	39,343	26	1,022,918	100	10	10	10
Lorain	17,013	40	680,520	76	4	23	15
Lucas	18,116	36	652,176	98	4	10	4
Madison	76,663	36	2,759,868	93	..	10	7

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Corn.						
	Estimated Area Planted in 1895.	Estimated Average Yield per Acre.	Estimated Total Bushels Pro- duced.	Cut Up for Fodder.	Put Into Silo.	Date of Cutting for Fodder—Days After Sept. 1.	Date Cribbing Be- gan—Days After Oct. 1.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Days.</i>	<i>Days.</i>
Mahoning	15,835	39	617,565	100	4	12	12
Marion	39,508	40	1,580,320	95	..	14	19
Medina	19,154	35	530,390	99	2	18	10
Meigs	16,554	28	463,512	98	..	25	27
Mercer	52,413	35	1,834,455	95	..	14	13
Miami	51,565	31	1,598,515	80	1	11	20
Monroe	17,357	26	451,282	97	5	13	23
Montgomery	46,810	36	1,685,160	95	..	23	10
Morgan	16,526	35	578,410	99	..	13	16
Morrow	24,829	40	993,160	99	10	15	10
Muskingum	29,135	36	1,048,860	100	5	21	21
Noble	16,963	26	441,038	99	..	18	24
Ottawa	16,777	35	587,195	50	..	13	31
Paulding	28,237	36	1,016,532	93	..	10	14
Perry	32,906	34	1,118,804	99	1	10	19
Pickaway	69,263	33	2,285,679	97	11	19	17
Pike	20,990	19	398,810	97	..	19	26
Portage	15,270	36	549,720	62	5	10	6
Preble	49,481	31	1,533,911	47	..	30	18
Putnam	48,265	38	1,834,070	94	20	11	13
Richland	29,257	42	1,228,794	99	1	9	8
Ross	67,019	22	1,474,418	97	..	19	19
Sandusky	36,165	38	1,374,270	97	..	8	10
Scioto	20,382	30	611,460	58	2	22	17
Seneca	43,990	38	1,671,620	100	..	18	13
Shelby	41,394	28	1,159,032	96	..	15	22
Stark	29,657	40	1,186,280	96	7	21	19
Summit	17,755	40	710,200	99	7	21	11
Trumbull	12,831	33	423,423	96	7	14	17
Tuscarawas	22,076	36	794,736	97	1	19	24
Union	54,853	27	1,481,085	75	..	10	15
Van Wert	44,418	35	1,554,630	96	1	14	9
Vinton	12,880	22	283,360	98	..	19	17
Warren	56,184	38	2,134,992	77	..	20	18
Washington	23,313	35	815,955	98	..	20	23
Wayne	36,565	40	1,462,600	86	5	21	13
Williams	25,153	35	880,355	96	3	10	10
Wood	71,716	35	2,510,060	69	3	20	12
Wyandot	30,937	40	1,237,480	93	3	21	16
Averages .....	.....	33.9	.....	90	4	17	16
Totals	2,853,535	...	96,263,789	..	..	Sept.	Oct.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONTINUED.

Counties.	Clover Seed.	Apples.	Potatoes.	Tobacco.	Cattle.	Sheep.
	Probable Total Yield Compared With an Average.	Yield Compared With an Average.	Average Yield Per Acre.	Product Per Acre.	Being Fed for Spring Market Compared With Last Year.	Being Fed for Autumn Compared With Last Year.
	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Pounds.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>
Adams	35	100	25	733	86	90
Allen	10	55	48	.....	52	63
Ashland	48	28	130	.....	73	70
Ashtabula	80	40	131	.....	96	80
Athens	23	107	22	.....	95	88
Auglaize	20	78	54	.....	71	80
Belmont	6	70	20	720	51	39
Brown	85	100	38	830	100	100
Butler	86	98	52	.....	82	77
Carroll	23	30	100	300	72	50
Champaign	59	100	90	.....	70	69
Clark	58	100	71	.....	71	68
Clermont	81	96	63	825	79	88
Clinton	91	100	45	900	90	88
Columbiana	53	13	104	.....	66	56
Coshocton	66	69	53	.....	51	69
Crawford	95	48	131	.....	72	79
Cuyahoga	28	65	94	.....	73	67
Darke	55	100	53	700	93	53
Defiance	46	75	74	950	90	100
Delaware	58	31	30	.....	73	66
Eric	64	58	81	.....	100	89
Fairfield	53	95	42	.....	70	79
Fayette	90	100	42	.....	93	80
Franklin	83	77	19	.....	78	55
Fulton	43	56	93	.....	100	68
Gallia .....	.....	98	35	.....	47	80
Geauga	80	7	134	.....	92	60
Greene	89	100	36	800	64	53
Guernsey	38	100	26	.....	59	52
Hamilton	83	100	43	.....	.....	100
Hancock	30	82	73	.....	93	83
Hardin	26	53	63	.....	70	55
Harrison	31	59	40	.....	90	68
Henry	48	76	55	.....	80	76
Highland	69	120	48	500	69	83
Hocking	15	23	102	.....	90	75
Holmes	98	73	77	.....	100	65
Huron	71	54	98	.....	69	76
Jackson	55	97	25	.....	60	55
Jefferson	35	25	85	.....	35	33
Knox	67	53	76	.....	51	64
Lake	20	43	125	.....	70	100
Lawrence	95	100	63	.....	78	63
Licking	52	54	58	.....	55	61
Logan	17	78	35	.....	49	59
Lorain	24	10	119	.....	77	92
Lucas	44	41	89	.....	85	98
Madison	97	84	38	.....	78	63

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC.
CONCLUDED.

Counties.	Clover Seed.	Apples.	Potatoes.	Tobacco.	Cattle.	Sheep.
	Probable Total Yield Compared With an Average.	Yield Compared With an Average.	Average Yield Per Acre.	Product Per Acre.	Being Fed for Spring Market Compared With Last Year.	Being Fed for Autumn Compared With Last Year.
	Per Cent.	Per Cent.	Per Cent.	Pounds.	Per Cent.	Per Cent.
Mahoning	42	10	105	.....	70	53
Marion	64	5	46	.....	73	79
Medina	18	50	87	.....	68	68
Meigs	25	100	33	.....	45	30
Mercer	18	39	44	.....	72	97
Miami	63	95	50	400	77	73
Monroe	63	91	20	725	55	78
Montgomery	35	105	28	525	85	100
Morgan	18	100	44	350	81	54
Morrow	95	58	83	.....	88	83
Muskingum	31	97	36	.....	50	56
Noble	20	93	31	340	44	52
Ottawa	20	93	40	.....	100	89
Paulding	30	46	39	.....	75	65
Perry	33	85	40	.....	65	65
Pickaway	45	100	28	.....	86	84
Pike	60	100	36	.....	28	10
Portage	43	3	116	.....	49	42
Preble	87	110	50	750	90	35
Putnam	48	32	58	.....	87	94
Richland	65	30	102	.....	75	63
Ross	80	115	42	.....	100	90
Sandusky	39	30	74	.....	60	75
Scioto	90	100	34	.....	80	60
Seneca	54	58	67	.....	75	86
Shelby	46	100	47	.....	90	67
Stark	54	22	104	.....	68	78
Summit	36	50	83	.....	68	51
Trumbull	31	4	110	.....	80	66
Tuscarawas	40	61	72	.....	100	100
Union	50	25	42	.....	77	100
Van Wert	20	35	45	.....	92	65
Vinton	70	100	52	.....	57	75
Warren	100	100	63	800	97	93
Washington	28	100	34	400	49	70
Wayne	83	47	143	900	61	61
Williams	47	52	90	.....	75	60
Wood	40	72	43	.....	86	83
Wyandot	82	42	103	.....	79	87
Averages	52	71	64	655	73	72

TABLE SHOWING THE ANNUAL PRODUCTION AND PRICE OF WHEAT AND CORN FOR THE YEARS 1850 TO 1895, INCLUSIVE.

Year.	Bushels of Wheat.	Average Number of Bushels per Acre.	Price.		Bushels of Corn.	Average Number of Bushels per Acre.	Price.	
			Range.	Average.			Range.	Average.
1850.....	31,500,000	18.	\$0.70 to \$1.10	.89	56,619,608	36.8	\$0.24 to \$0.51	.38
1851.....	25,309,225	15.2	.58 " .78	.69	61,271,382	36.7	.30 " .49	.38
1852.....	23,043,757	14.1	.59 " .63	.60	58,165,517	33.6	.25 " .45	.39
1853.....	17,118,311	12.	.60 " .85	.73	73,436,070	40.	.37 " .55	.42
1854.....	11,989,110	8.	.85 " 1.70	1.19	52,171,551	26.	.40 " .55	.46
1855.....	19,569,730	13.81	1.10 " 2.00	1.54	87,587,434	30.7	.55 " .80	.67
1856.....	15,335,837	10.2	.90 " 1.70	1.27	57,892,515	27.7	.32 " .63	.42
1857.....	25,397,614	14.	1.00 " 1.60	1.18	82,555,186	36.6	.48 " .80	.59
1858.....	17,655,483	10.4	1.07 " 1.00	.77	50,863,382	27.7	.55 " .61	.42
1859.....	13,317,967	7.2	.90 " 1.70	1.15	68,730,846	29.5	.50 " .80	.72
1860.....	23,640,546	13.8	.93 " 1.38	1.17	91,588,704	38.2	.38 " .60	.60
1861.....	20,055,424	12.	.65 " 1.12	.93	74,858,878	33.5	.30 " .50	.34
1862.....	20,764,887	12.	.72 " 1.30	.86	62,794,887	32.	.37 " .40	.31
1863.....	20,152,410	11.36	.82 " 1.30	1.04	54,614,617	27.	.35 " .70	.63
1864.....	15,541,385	9.33	.95 " 2.12	1.41	54,053,491	27.	.56 " 1.29	1.03
1865.....	13,234,130	9.	1.25 " 2.80	1.78	60,053,688	30.5	.56 " .65	.64
1866.....	5,851,747	4.5	1.95 " 3.50	2.27	80,386,320	34.4	.45 " .58	.54
1867.....	13,550,721	11.51	1.95 " 3.50	2.79	63,725,288	32.8	.52 " 1.08	.92
1868.....	16,480,050	11.31	1.15 " 1.98	1.57	62,151,346	28.4	.37 " 1.10	.73
1869.....	26,499,729	15.37	1.04 " 1.88	1.35	88,765,269	37.5	.69 " 1.06	.83
1870.....	18,728,341	11.29	1.10 " 1.55	1.27	98,361,060	36.7	.50 " .79	.66
1871.....	22,274,376	13.27	1.10 " 2.08	1.59	103,058,224	40.9	.44 " .57	.49
1872.....	18,987,664	11.22	1.13 " 2.08	1.56	103,058,224	35.1	.39 " .50	.42
1873.....	21,974,385	12.61	1.08 " 1.90	1.38	101,815,494	39.8	.42 " .75	.60
1874.....	21,807,087	9.22	1.03 " 1.75	1.16	97,552,024	34.1	.58 " .87	.72
1875.....	17,354,439	10.74	1.00 " 1.70	1.10	112,552,642	32.5	.40 " .73	.51
1876.....	27,386,266	15.63	1.06 " 2.13	1.41	101,884,305	36.8	.40 " .57	.46
1877.....	35,218,783	16.58	1.06 " 1.35	1.11	114,839,107	37.8	.38 " .45	.42
1878.....	41,052,120	17.58	.85 " 1.15	.96	96,908,800	34.	.31 " .45	.37
1879.....	48,540,307	17.20	.93 " 1.37	1.16	106,414,584	38.9	.42 " .40	.42
1880.....	48,540,307	17.20	.93 " 1.37	1.16	78,712,796	34.	.40 " .87	.49
1881.....	38,102,653	15.29	.95 " 1.40	1.32	90,869,137	34.	.56 " .76	.62
1882.....	27,112,103	10.67	.95 " 1.17	1.05	64,001,618	24.2	.44 " .76	.54
1883.....	27,169,758	14.4	.80 " 1.10	1.01	87,797,813	32.3	.40 " .59	.47
1884.....	36,336,119	9.8	.72 " 1.09	.89	112,192,744	39.	.37 " .59	.48
1885.....	24,183,430	14.	.74 " 1.00	.88	86,818,556	33.5	.32 " .48	.39
1886.....	37,660,681	10.4	.71 " .89	.80	83,118,838	30.5	.34 " .55	.40
1887.....	28,400,000	10.4	.71 " .89	.80	83,118,838	30.5	.34 " .55	.40
1888.....	26,160,994	11.7	.71 " .96	.85	111,155,506	38.9	.44 " .61	.52

1880	31,053,448	14.6	.73 "	1.15	.93	87,838,192	32.3	.30 "	.49	.37
1890	31,709,076	13.8	.76 "	1.02	.83	63,694,215	24.5	.27 "	.56	.30
1891	46,083,480	17.5	.82 "	1.16	.99	80,500,000	33.	.49 "	.77	.60
1892	40,254,021	14.4	.73 "	1.01	.90	80,902,908	30.8	.39 "	.67	.48
1893	45,848,258	17.7	.82 "	.93	.84	67,681,125	25.	.37 "	.45	.42
1894	50,452,483	20.2	.76 "	.86	.51	70,712,923	23.	.35 "	.60	.45
1895	28,520,930	11.9	.53 "	.90	.66	86,365,769	31.9	.24 "	.80	.41

NOTE.—Prices as here given relate to the commercial year ending September 1st.

TABLE SHOWING THE AVERAGE PRODUCTION AND PRICE OF WHEAT AND CORN BY DECADES.

Decades.	Average Bushels of Wheat.	Average Bushels Per Acre.	Range of Price.	Average Price.	Average Bushels of Corn.	Average Bushels Per Acre.	Range of Price.	Average Price.
1850 to 1860	20,023,400	12.29	\$0.58 to \$2.00	\$1.00	61,950,369	33.4	\$0.24 to \$0.90	\$0.48
1860 to 1870	17,584,085	10.91	60 to 3.50	1.61	64,930,426	32.	27 to 1.29	64
1870 to 1880	21,656,959	13.29	85 to 2.15	1.27	99,986,129	36.5	38 to 1.05	54
1880 to 1890	34,038,945	13.21	71 to 1.50	1.00	90,991,979	33.5	30 to .87	45
Last ten years, 1886 to 1895, inclusive.....	36,463,152	14.5	48 to 1.16	.80	83,658,600	30.7	27 to .77	44

NUMBER OF HORSES, CATTLE, MULES, ETC.

Returned to the Auditor of State's Office by the several County Auditors, for the years 1894 and 1895, as required by Section 1049, Revised Statutes.

Counties.	Horses.		Cattle.		Mules.	
	1894.	1895.	1894.	1895.	1894.	1895.
Adams	5,705	5,011	7,506	8,575	246	218
Allen	9,231	9,193	12,358	12,779	133	139
Ashland	8,144	7,784	13,450	13,124	83	78
Ashtabula	11,576	11,132	24,704	24,386	52	53
Athens	5,736	5,349	13,078	10,836	219	190
Auglaize	9,093	9,171	13,920	14,705	231	207
Belmont	11,002	10,249	20,597	19,871	383	382
Brown	7,821	7,313	11,534	10,679	325	291
Butler	12,274	11,837	14,371	14,030	823	649
Carroll	6,350	5,833	13,433	12,226	77	96
Champaign	12,141	11,809	15,423	15,714	175	175
Clark	12,476	11,392	16,509	14,491	217	207
Clermont	8,447	7,667	11,097	10,310	733	679
Clinton	11,074	10,480	13,146	12,906	340	362
Columbiana	10,260	9,854	18,553	18,234	191	128
Coshocton	8,122	7,391	15,103	14,519	143	110
Crawford	8,595	8,631	14,349	14,592	138	91
Cuyahoga	19,636	18,714	15,635	15,549	124	104
Darke	15,631	15,700	21,125	20,837	407	409
Defiance	7,385	6,748	8,154	8,481	107	96
Delaware	10,059	9,161	14,779	14,429	86	60
Eric	6,104	5,994	6,152	6,980	25	21
Fairfield	10,654	10,533	19,811	19,073	145	143
Fayette	11,171	11,143	16,149	16,143	224	260
Franklin	17,667	18,136	19,414	19,846	198	147
Fulton	7,816	7,653	12,773	12,855	45	40
Gallia	5,741	5,673	11,201	10,324	273	281
Geauga	6,032	5,780	17,077	17,243	52	48
Greene	11,730	11,510	15,974	15,027	226	240
Guernsey	6,671	6,911	14,514	14,553	154	183
Hamilton	20,656	20,330	20,007	19,883	1,899	1,572
Hancock	12,179	11,405	18,917	19,086	132	121
Hardin	8,861	8,457	12,543	12,352	200	161
Harrison	6,418	5,780	12,225	11,335	36	43
Henry	7,312	7,167	10,926	11,712	111	101
Highland	10,088	9,298	16,261	16,282	295	291
Hocking	4,193	3,980	9,845	8,821	119	85
Holmes	7,428	6,972	16,885	16,767	110	103
Huron	9,090	8,870	12,343	12,648	73	84
Jackson	4,026	3,868	10,259	9,603	782	784
Jefferson	7,231	6,813	12,705	11,133	213	196
Knox	9,722	9,243	16,064	16,303	121	117
Lake	4,969	4,899	6,069	6,006	43	30
Lawrence	4,142	4,301	8,634	7,665	656	635
Licking	14,538	14,037	25,059	23,948	145	115
Logan	10,040	10,083	13,942	14,716	95	103

NUMBER OF HORSES, CATTLE, MULES, Etc.—CONTINUED.

Counties.	Horses.		Cattle.		Mules.	
	1894.	1895.	1894.	1895.	1894.	1895.
Lorain	10,727	10,268	15,996	10,182	42	47
Lucas	9,024	8,955	7,546	7,695	134	126
Madison	10,548	10,652	18,379	18,918	284	268
Mahoning	9,725	9,532	17,238	15,301	83	98
Marion	9,117	8,621	12,054	12,152	141	143
Medina	9,312	8,971	15,417	15,749	142	236
Meigs	6,323	5,955	12,021	10,893	288	284
Mercer	9,393	9,061	15,777	14,812	171	162
Miami	12,207	11,999	13,805	13,405	309	280
Monroe	6,341	5,777	13,935	12,843	93	73
Montgomery	17,264	16,833	18,567	18,618	316	265
Morgan	6,756	6,282	14,029	12,878	66	53
Morrow	8,485	8,412	11,965	12,434	74	57
Muskingum	11,594	11,034	25,151	23,786	229	222
Noble	6,452	5,220	13,303	12,774	44	52
Ottawa	5,504	5,493	17,598	7,669	13	27
Paulding	5,253	4,780	5,477	4,356	80	54
Perry	6,703	6,712	14,892	13,987	123	124
Pickaway	11,314	10,754	19,803	20,047	304	301
Pike	4,561	4,651	6,268	5,499	267	246
Portage	9,052	8,930	19,851	19,654	83	70
Preble	10,140	9,932	14,374	12,805	229	228
Putnam	9,115	9,141	13,804	13,221	106	94
Richland	9,991	9,474	14,974	14,863	195	177
Ross	12,722	12,730	19,285	18,972	220	236
Sandusky	9,518	9,008	12,897	12,807	87	80
Scioto	5,539	5,395	8,693	8,227	912	842
Seneca	10,477	10,068	15,327	16,052	88	104
Shelby	9,045	8,901	13,984	14,018	131	124
Stark	15,736	15,575	26,061	24,989	400	372
Summit	9,995	9,905	17,516	17,426	89	90
Trumbull	12,761	12,003	27,051	26,594	59	68
Tuscarawas	8,847	8,950	20,278	20,344	142	130
Union	8,915	8,557	12,754	12,953	66	62
Van Wert	9,383	8,962	10,852	10,919	195	167
Vinton	3,023	2,948	6,832	6,242	178	144
Warren	10,549	10,285	12,380	12,129	505	475
Washington	8,724	8,135	17,784	15,509	188	192
Wayne	12,233	11,685	21,392	21,435	162	155
Williams	7,629	7,346	10,845	11,020	95	83
Wood	11,514	11,107	15,473	15,788	155	241
Wyandot	8,092	7,641	10,534	10,757	88	63
Totals	824,840	795,895	1,296,105	1,252,901	19,181	17,943

NUMBER OF SHEEP AND HOGS

Returned to the Auditor of State's Office by the Several County Auditors, for
the Years 1894 and 1895, as Required by Section 1049, Revised Statutes.

Counties.	Sheep.		Hogs.	
	1894.	1895.	1894.	1895.
Adams	14,311	11,420	9,362	10,591
Allen	28,634	22,681	20,661	21,937
Ashtabula	43,368	36,075	12,459	13,924
Aurora	29,557	25,228	4,209	6,475
Bath	61,550	40,861	4,277	4,525
Blairstown	16,008	13,743	20,287	22,433
Belmont	107,751	89,370	12,197	12,560
Brown	13,249	11,910	16,380	19,063
Butler	12,202	10,252	18,915	19,947
Carroll	100,338	78,584	8,514	9,423
Champaign	32,268	31,666	22,798	25,723
Clark	43,572	28,653	20,297	23,733
Clermont	8,572	8,193	13,062	13,094
Clinton	32,537	28,848	27,836	25,734
Columbiana	55,475	43,214	11,060	11,711
Coshocton	110,135	94,376	11,857	14,580
Crawford	52,029	53,811	21,542	25,244
Cuyahoga	9,353	7,976	2,417	2,728
Darke	10,537	8,350	27,923	31,446
Defiance	15,131	14,064	10,921	12,109
Delaware	65,297	53,635	15,773	20,199
Erie	20,792	16,085	6,784	7,498
Fairfield	26,935	21,589	28,392	28,287
Fayette	23,212	20,952	32,639	27,504
Franklin	18,449	15,771	23,596	26,376
Fulton	33,618	24,754	14,627	18,250
Gallia	22,751	20,024	6,938	7,548
Geauga	22,438	18,257	3,073	3,763
Greene	24,819	22,953	24,084	25,650
Guernsey	102,831	88,459	7,213	9,083
Hamilton	3,657	3,289	11,239	11,398
Hancock	48,575	41,912	77,830	34,148
Hardin	46,782	43,532	20,019	23,395
Harrison	140,840	121,599	6,633	6,778
Henry	14,174	10,914	15,268	18,015
Highland	27,510	23,300	25,315	28,711
Hocking	28,436	23,392	5,657	6,114
Holmes	41,146	34,027	16,586	18,294
Huron	60,977	54,170	9,923	12,015
Jackson	15,363	14,769	4,036	4,446
Jefferson	82,985	65,203	7,292	7,364
Knox	117,246	103,200	15,956	19,121
Lake	12,415	9,690	1,336	1,612
Lawrence	5,856	5,031	4,842	5,116
Licking	137,018	115,620	24,851	29,054
Logan	51,541	45,220	17,662	21,924

NUMBER OF SHEEP AND HOGS—CONTINUED.

Counties.	Sheep.		Hogs.	
	1894.	1895. *	1894.	1895.
Lorain	36,711	30,668	6,695	8,372
Lucas	5,723	4,121	5,938	7,564
Madison	52,487	47,704	30,250	30,443
Mahoning	45,350	37,678	7,407	8,227
Marion	64,552	56,109	19,666	25,192
Medina	48,850	40,894	7,136	9,278
Meigs	45,853	39,698	4,706	5,584
Mercer	13,931	12,222	25,420	28,391
Miami	7,747	6,253	14,160	15,487
Monroe	35,320	25,833	6,443	6,480
Montgomery	6,043	5,184	19,402	20,873
Morgan	89,610	72,080	6,234	7,379
Morrow	84,894	72,002	10,203	12,942
Muskingum	120,122	105,392	13,148	14,379
Noble	75,938	61,070	7,467	8,047
Ottawa	9,641	7,977	8,942	9,759
Paulding	6,840	6,726	6,439	8,896
Perry	44,694	37,022	8,736	10,002
Pickaway	15,015	13,615	27,355	30,124
Pike	7,407	7,989	6,588	7,767
Portage	42,274	33,662	6,774	7,809
Preble	10,376	9,042	22,284	25,837
Putnam	15,130	13,133	26,880	33,019
Richland	54,017	47,051	17,584	19,459
Ross	20,312	17,885	26,076	27,029
Sandusky	24,817	20,375	20,258	22,245
Scioto	2,926	2,973	6,537	7,400
Seneca	43,258	39,655	27,654	31,313
Shelby	9,406	8,414	16,883	19,184
Stark	41,081	33,802	22,068	22,489
Summit	16,708	13,442	8,121	9,281
Trumbull	49,181	40,339	5,453	6,968
Tuscarawas	57,225	45,206	13,488	14,183
Union	56,814	53,698	20,669	22,494
Van Wert	14,667	13,045	21,173	24,872
Vinton	30,335	27,799	2,393	2,930
Warren	18,720	16,288	18,611	20,165
Washington	66,967	52,576	8,301	8,767
Wayne	35,424	29,808	20,307	22,814
Williams	30,746	26,689	13,314	17,194
Wood	30,752	24,816	20,653	25,162
Wyandot	75,078	68,026	18,754	23,930
Totals	3,555,182	3,005,403	1,331,169	1,437,393

SUMMARY.

Horses.....	28,945	decrease.
Cattle.....	43,204	"
Mules.....	1,238	"
Sheep.....	549,779	"
Hogs.....	106,224	increase.

OFFICE OF THE AUDITOR OF STATE,

COLUMBUS, OHIO, *August 15, 1895.*

I hereby certify the foregoing to be a true copy, taken from the reports of the several County Auditors, as returned to this office.

Witness my hand and seal officially.

E. W. POE,
Auditor of State.

OHIO STATE FAIR — AND — INDUSTRIAL EXPOSITION,

COLUMBUS, SEPTEMBER 2, 3, 4, 5, 6, 1895.

BULLETIN OF ENTRIES AND AWARDS.

The Bulletin of the Forty-fifth Ohio State Fair and Industrial Exposition, herewith presented, contains a list of entries and awards in the several classes and divisions of live stock, a list of awards in all other departments and a list of exhibitors in the departments of machinery and agricultural implements, mechanics' and manufacturers' products, merchandise, music, etc., where there was no premium competition.

The State Fair and Industrial Exposition of 1895 has passed into history as the grandest and most complete, from an educational point of view, ever held in Ohio, and as a financial success, above the average.

Every building was filled with the latest and best in manufactures and the choicest in agricultural production, and in the live stock buildings and show rings there were present the best animals and most perfect types of the several breeds and classes of horses, cattle, sheep and swine.

The State Board of Agriculture, as managers and operators of the Fair, fully realize its importance to the public, as illustrating progress and improvement, hence encourage only exhibits of merit; education by object lessons being paramount to everything else. Nothing is permitted on the grounds to which objection could in any manner be made; no concessions not in line with strict and honorable business or pleasure are granted. The people recognize the benefits of a clean, educational fair, and have extended a liberal patronage, while the press generally has been loud in its praises of the Fair and the influences for good to the people of the State.

In the line of progress and development the Board this year made a decided and successful effort to introduce and establish night exhibitions

by electric light. An electric plant was constructed of power sufficient to light the grounds and all the exposition buildings, as well as the live stock departments and the speed track, and every night during the progress of the exposition the grounds and buildings were illuminated and open to the public without extra charge. Many special features and attractions were provided to make the night exhibitions interesting and instructive and many visitors during the day remained to witness the display at night by electric light. There were hundreds who could only attend at night and such were highly gratified.

The Board was greatly pleased with the new feature. Press and people gave to it their unqualified approval and in the future the feature of night exhibitions and special attractions will be enlarged and improved upon as meeting popular and advanced ideas and popular public demands.

The classification of departments and members of the Board in charge were as follows:

General Headquarters.....	President A. J. Clark
Gates and admissions.....	Treasurer F. A. Derthick
First Department—Horses.....	J. H. Pringle
Second Department—Cattle.....	C. Bordwell
Third Department—Sheep.....	G. Liggett
Fourth Department—Swine.....	E. C. Ellis
Fifth Department—Poultry.....	E. C. Ellis
Sixth Department—Farm products.....	N. Ohmer
Seventh Department—Fruits.....	N. Ohmer
Eighth Department—Machinery and agricultural implements.....	J. T. Robinson
Ninth Department—Mechanics' and manufacturers' products.....	A. H. Kling
Tenth Department—Woman's work.....	J. C. Bower
Eleventh Department—Merchandise, music, etc.....	A. H. Kling
Twelfth Department—Fine arts.....	J. C. Bower
Executive Departments.....	{ W. W. Miller, Secretary. J. W. Fleming, Assistant Secretary.

The Board hopes to continue in the line of advancement and will bend every effort to keep the Fair up to the high standard of excellence it has attained, and in the front rank of progressive State institutions, feeling certain that the people will support such effort and encourage the enterprise.

ENTRIES AND AWARDS IN LIVE STOCK DEPARTMENTS.

HORSES — THOROUGHBREDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
N. Ackerman, Columbus, Ohio.....	Lord Russell	First ...	\$ 20 00
<i>Stallion 2 years old and under 3.</i>			
W. H. Ohlman, Columbus, Ohio.....	General Montrose	First ...	10 00
C. A. Valentine, Washington C. H., Ohio.....	Wabaw.....	Second ..	5 00
<i>Stallion 1 year old and under 2.</i>			
G. W. O'Harra, Alton, Ohio.....	Moon Rose.....	First ...	10 00
<i>Mare 4 years old and over.</i>			
W. H. Snyder, Newark, Ohio	Katy Woodbridge .....	.....	.....
C. A. Valentine, Washington C. H., Ohio	Alzo.....	Second ..	10 00
Charles Talbot, Columbus, Ohio	Evening	First ...	15 00
<i>Mare 2 years old and under 3.</i>			
Charles Talbot, Columbus, Ohio	Peep O'Day	First ...	10 00
<i>Filly 1 year old and under 2.</i>			
C. A. Valentine, Washington C. H., Ohio	Clerito	First ...	10 00
<i>Brood mare with foal at side.</i>			
W. H. Snyder, Newark, Ohio	Katy Woodbridge and colt ..	.....	.....
G. W. O'Harra, Alton, Ohio	Full Moon and colt.....	First ...	15 00

Expert Judge—C. H. Ganson.

ROADSTERS — STANDARD BRED.

Owners' Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
McPerfect, Sunbury, Ohio.....	McGuire	First ...	\$ 20 00
Donovan Bros., Cardington, Ohio	Toskey D	Second ..	10 00
Bishop Bros., Jerome, Ohio	Alacine .....	.....	.....
<i>Stallion 3 years old and under 4.</i>			
Jonathan Hay, Ashville, Ohio	Elire.....	First ...	20 00
<i>Stallion 2 years old and under 3.</i>			
Steen & McCoy, Washington C. H., Ohio.....	Jim Canada.....	.....	.....
C. M. Bell, Ashley, Ohio	Bimley.....	First ...	10 00
H. W. Cookston, Decliff, Ohio	Major C.....	Second ..	5 00

HORSES — STANDARD BRED — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Mare 4 years old and over.</i>			
B. F. Pursell, Reynoldsburg, Ohio.....	Minnie Parsell	First	\$ 15 00
Ed. Hall, Columbus, Ohio	Happiness	First	
D. H. Clifton, Decliff, Ohio	Belle Swift	First	
Bishop Bros., Jerome, Ohio	Amazon	First	
Same	Lady Chilowee	First	
A. R. Miller, Pataskala, Ohio .....	.....	First	
<i>Mare 3 years old and under 4.</i>			
D. H. Clifton, Decliff, Ohio	Decliff Maid	First	10 00
<i>Mare 2 years old and under 3.</i>			
E. W. Kodebaugh, Reynoldsburg, Ohio	Lilly E.	Second	5 00
J. W. H. Stalter, Wagram, Ohio	Laciera	First	10 00
A. R. Miller, Pataskala, Ohio .....	.....	First	
<i>Filly 1 year old and under 2.</i>			
C. H. Bell, Ashley, Ohio	Pretty Pawn	First	10 00
F. Shockley, Washington C. H., Ohio .....	.....	Second	5 00
<i>Brood mare with foal at side.</i>			
John C. Price, Harrisburg, Ohio .....	.....	Second	10 00
A. R. Miller, Pataskala, Ohio .....	.....	First	15 00

Expert Judge — C. H. Ganson.

ROADSTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
J. A. Hall, Columbus, Ohio	Truro Wilkes	First	\$ 20 00
F. Shockley, Washington C. H., Ohio .....	.....	Second	10 00
A. R. Miller (for F. Egolf), Pataskala, Ohio .....	.....	Second	
<i>Stallion 2 years old and under 3.</i>			
E. G. Corbett, Columbus, Ohio	Churchdale .....	.....
B. F. Pursell, Reynoldsburg, Ohio	Columbus Boy .....	.....
James Alexander, Columbus, Ohio	Harry Churchill	Second	5 00
McPerfect, Sunbury, Ohio	Alton	First	10 00
A. R. Miller, Pataskala, Ohio .....	.....	First	
<i>Stallion 1 year old and under 2.</i>			
B. F. Pursell, Reynoldsburg, Ohio	Beauty	Second	5 00
J. A. Stalter, Wagram, Ohio	Alertcob	First	10 00
<i>Mare 4 years old and over.</i>			
P. F. Elliott, Alton, Ohio	Daisy Wilkes .....	.....
J. W. H. Stalter, Wagram, Ohio	Flossie Rush .....	.....
A. M. Gibson, Camp Chase, Ohio	Walnut Maid .....	.....
C. J. Wright, North Columbus, Ohio	Kitty Moore .....	.....
J. A. Hall, Columbus, Ohio	Emma Wilkes .....	.....
F. Shockley, Washington C. H., Ohio	Minnie K .....	.....
C. V. Keller, Newark, Ohio	Lady Delano .....	.....
Irvin Millar, Duvall, Ohio .....	.....	First	15 00
H. M. Wood, Cardington, Ohio .....	.....	Second	10 00
J. Maxwell, Cardington, Ohio .....	.....	First	
P. Manger, Pataskala, Ohio .....	.....	Second	

HORSES—ROADSTERS—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Mare 3 years old and under 4.</i>			
C. H. Bell, Ashley, Ohio.		Second	\$5 00
D. H. Moore, Athens, Ohio.		First	10 00
<i>Mare 2 years old and under 3.</i>			
P. F. Elliott, Alton, Ohio.	Eva		
G. M. Hines, Hilliards, Ohio.	Miss Woodford		
B. F. Pursell, Reynoldsburg, Ohio.	Columbus Girl	Second	5 00
J. Strahl, Reynoldsburg, Ohio.	Minnie Wilkes		
H. C. Beelman, Ashley, Ohio.			
Marion Holt, Galloway, Ohio.	Maggie Brook		
C. H. Bell, Ashley, Ohio.			
J. S. Wolf, Reynoldsburg, Ohio.	Columbus Queen	First	10 00
A. R. Miller, Pataskala, Ohio.			
<i>Filly 1 year old and under 2.</i>			
B. F. Pursell, Reynoldsburg, Ohio.	Ruby		
E. W. Rodebaugh, Reynoldsburg, Ohio.	Ohio Girl	Second	5 00
Marion Holt, Galloway, Ohio.	Bessie Brook		
Oscar Dixon, Galena, Ohio.	Bessie	First	10 00
<i>Brood mare with foal at side.</i>			
C. H. Bell, Ashley, Ohio.	Black Lady		
Oscar Dixon, Galena, Ohio.	Maud and Pioly Girl	Second	10 00
L. M. Siebold, Alton, Ohio.	Bessie and colt		
J. S. Wolf, Reynoldsburg, Ohio.	Dolly		
A. R. Miller, Pataskala, Ohio.		First	15 00
<i>Pair matched roadsters.</i>			
John Evans, Newark, Ohio.			
I. S. Keeton, Lattas, Ohio.		First	20 00
D. H. Clifton, Decliff, Ohio.			
W. E. Bennett, Jeffersonville, Ohio.		Second	10 00
<i>Gentleman's fancy driving team.</i>			
J. A. Hall, Columbus, Ohio.		First	20 00
J. Maxwell, Cardington, Ohio.		Second	10 00
W. E. Bennett, Jeffersonville, Ohio.			
<i>Gentleman's fancy single driver.</i>			
B. F. Pursell, Reynoldsburg, Ohio.	Col. Arthur		
Ed. Elliott, Alton, Ohio.	Daisy Wilkes		
Jonathan Hay, Ashville, Ohio.	Ambition		
Charles Talbot, Columbus, Ohio.			
James Alexander, Columbus, Ohio.	Bob Gore		
Charles E. Tuller, Dublin, Ohio.	Tommy		
John Evans, Newark, Ohio.		First	10 00
H. M. Wood, Cardington, Ohio.			
J. Maxwell, Cardington, Ohio.		Second	5 00

Expert Judge—Seth Baughman.

FRENCH COACH.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
McLaughlin Bros., Columbus, Ohio.		First	20 00
Same		Second	10 00
Same			
Same			
Same			

HORSES — FRENCH COACH — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 3 years old and under 4.</i>			
McLaughlin Bros., Columbus, Ohio.....	First ...	\$ 20 00
Same	Second ..	10 00
Same
Same
Same
<i>Stallion 2 years old and under 3.</i>			
McLaughlin Bros., Columbus, Ohio.....	First ..	10 00

Expert Judge — C. H. Ganson.

HACKNEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
W. O. Maddux, Xenia, Ohio.....	March Past .....	.....	.....

GRADE COACH.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Gelding or mare 4 years old and over.</i>			
Minnie A. Howell, Columbus, Ohio	Jim Patchen.....	First ...	10 00
Burton Case, Granville, Ohio.....	Cash Boy.....	.....	.....
Same	Tom.....	.....	.....
Ben McMillan, Newark, Ohio	Minnie.....	.....	.....
John Evans, Newark, Ohio.....	.....	.....	.....
J. Maxwell, Cardington, Ohio.....	.....	Second ..	5 00
<i>Gelding or mare 3 years old and under 4.</i>			
A. R. Miller, Pataskala, Ohio.....	.....	First ...	10 00
<i>Gelding or mare 2 years old and under 3.</i>			
W. Shallenberger, Amanda, Ohio.....	.....	First ...	10 00
A. R. Miller, Pataskala, Ohio.....	.....	Second ..	5 00
<i>Gelding or mare 1 year old and under 2.</i>			
C. H. Bell, Ashley, Ohio.....	.....	Second ..	5 00
George Garlinghouse, Johnstown, Ohio.....	.....	First ...	10 00
<i>Pair matched geldings or mares.</i>			
Burton Case, Granville, Ohio.....	.....	Second ..	10 00
J. Maxwell, Cardington, Ohio.....	.....	First ...	15 00
McLaughlin Bros., Columbus, Ohio.....	.....	.....	.....

Expert Judge — C. H. Ganson.

HORSES-- FRENCH DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
McLaughlin Bros., Columbus, Ohio.....		First	\$ 20 00
Same		Second	10 00
Same			
<i>Stallion 3 years old and under 4.</i>			
C. M. Jones, Plain City, Ohio.....	Moreri	First	20 00
<i>Stallion 2 years old and under 3.</i>			
P. J. Schaaf, Troyton, Ohio.....	Brownny		
E. J. Condit, Condit, Ohio.....	Confarea	First	10 00
<i>Mare 4 years old and over.</i>			
E. J. Condit, Condit, Ohio.....	Nelly Bly.....		
Same	Migolia	Second	10 00
A. J. Torbert, Plain City, Ohio.....	Fillet	First	15 00
<i>Mare 3 years old and under 4.</i>			
Fred. Feucht, Columbus, Ohio.....	Mollie.....	First	10 00
<i>Mare 2 years old and under 3.</i>			
C. M. Jones, Plain City, Ohio.....	Joan de Arc.....	First	10 00
<i>Filly 1 year old and under 2.</i>			
P. F. Elliott, Alton, Ohio	Laura	Second	5 00
E. J. Condit, Condit, Ohio	May Day	First	10 00
<i>Brood mare with foal at side.</i>			
P. F. Elliott, Alton, Ohio	Clyde.....	Second	10 00
E. J. Condit, Condit, Ohio	Nelly Bly and foal.....	First	15 00
Same	Maizola and foal		

Expert Judge—Seth Baughman.

SHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
Charles E. Tuller, Dublin, Ohio.....	Leek Arthur	First	20 00
Same	Barnaby III	Second	10 00
<i>Mare 4 years old and over.</i>			
A. B. Staley, Bokes Creek, Ohio.....	Lady	First	15 00

Expert Judge—Seth Baughman.

ENTRIES AND AWARDS.

HORSES — CLYDESDALE.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
J. Luther Ropp, Marcy, Ohio.....	Ferdinand .....	.....	.....
<i>Stallion 3 years old and under 4.</i>			
McLaughlin Bros., Columbus, Ohio.....	.....	First	\$ 20 00

Expert Judge — Seth Baughman.

BELGIAN.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 4 years old and over.</i>			
E. Courtright, Galloway, Ohio.....	Lion.....	First	20 00

Expert Judge — Seth Baughman.

GRADE DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Gelding or mare 4 years and over.</i>			
Mathias Fladt, Hilliards, Ohio.....	Sallie.....	.....	.....
Same	Betsy.....	.....	.....
Samuel Taylor, Plain City, Ohio.....	Queen.....	Second	5 00
Same	Mollie.....	.....	.....
T. A. Bazler, Derby, Ohio.....	Pollie.....	.....	.....
Same	Mollie.....	First	10 00
<i>Gelding or mare 3 years old and under 4.</i>			
P. F. Elliott, Alton, Ohio.....	Dick	Second	5 00
T. A. Bazler, Derby, Ohio.....	Pet	First	10 00
<i>Gelding or mare 2 years old and under 3.</i>			
Marion Holt, Galloway, Ohio.....	Tod.....	.....	.....
Charles E. Tuller, Dublin, Ohio.....	Lady Leek.....	First	10 00
Same	Trilby.....	Second	5 00
<i>Gelding or mare 1 year old and under 2.</i>			
P. F. Elliot, Alton, Ohio.....	Nettie.....	Second	5 00
John Fladt, Hilliards, Ohio.....	Daisy.....	First	10 00
A. J. Torbert, Plain City, Ohio.....	Maggie.....	.....	.....
Charles E. Tuller, Dublin, Ohio.....	.....	.....	.....
<i>Pair matched geldings or mares.</i>			
Mathias Fladt, Hilliards, Ohio.....	Sally and Betsy.....	Second	10 00
Samuel Taylor, Plain City, Ohio.....	Queen and Molly	First	15 00

Expert Judge — B. I. Jones.

HORSES — SADDLE HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Mare or gelding.</i>			
James Kincaid, Columbus, Ohio.....	Grover H.....		
E. L. McCollem, Columbus, Ohio.....	Harry.....	First...	\$ 10 00
F. A. Rose, Cardington, Ohio.....			
D. H. Moore, Athens, Ohio.....		Second...	5 00
<i>Horse, mare or gelding showing combined harness and saddle gait.</i>			
James Kincaid, Columbus, Ohio.....	Grover H.....	First...	10 00
E. L. McCollem, Columbus, Ohio.....	Harry.....	Second...	5 00

SPECIAL CLASS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Walk, trot and canter saddler.</i>			
Wm. Neil, Columbus, Ohio.....	Reuben.....		
G. A. Peters, Columbus, Ohio.....	Brandy.....	Second...	\$ 5 00
Charles Talbot, Columbus, Ohio.....	Sam.....		
H. J. Booth, Columbus, Ohio.....	Beaufort.....		
F. M. Hoover, Columbus, Ohio.....	Rex.....	First...	10 00
<i>High school horse.</i>			
A. H. Andrews, Columbus, Ohio.....	Colonel A.....	First...	S. Med
<i>High jump.</i>			
H. J. Booth, Columbus, Ohio.....	Beaufort.....	First...	B. Med
T. E. Keyes, Columbus, Ohio.....	Custer.....		
<i>Low jump.</i>			
W. R. Byers, Columbus, Ohio.....	Richmond.....	First...	S. Med
W. C. Reynolds, Columbus, Ohio.....	Olga.....		
<i>Qualified hunter.</i>			
F. E. Keyes, Columbus, Ohio.....	Custer.....	First...	S. Med
<i>Green Hunter.</i>			
H. J. Booth, Columbus, Ohio.....	Beaufort.....	First...	S. Med

Expert Judge—C. H. Gannon.

SHETLAND PONIES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 3 years old and over.</i>			
Cobb Gavitt, Ashley, Ohio.....	Ben Harrison.....	First...	\$ 15 00
W. H. Lucas, Columbus, Ohio.....	Baldy Tom.....	Second...	8 00
D. H. Moore, Athens, Ohio.....	Robert J.....		

HORSES—SHETLAND PONIES—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Stallion 2 years old and under 3.</i>			
Cobb Gavitt, Ashley, Ohio.....	Tom.....	First.....	10 00
Same.....	Jerry.....	Second.....	5 00
<i>Stallion 1 year old and under 2.</i>			
Cobb Gavitt, Ashley, Ohio.....	Dick.....	First.....	5 00
<i>Stallion under 1 year.</i>			
Cobb Gavitt, Ashley, Ohio.....	Jim.....	First.....	3 00
Same.....	Harry.....	Second.....	2 00
W. H. Lucas, Columbus, Ohio.....	Cutey.....		
D. H. Moore, Athens, Ohio.....	Red Light.....		
<i>Mare 3 years old and over.</i>			
Cobb Gavitt, Ashley, Ohio.....	Lady.....	First.....	10 00
Same.....	Nicely.....		
W. H. Lucas, Columbus, Ohio.....	Patsy.....		
D. H. Moore, Athens, Ohio.....	Florida.....	Second.....	5 00
A. L. Riley, Athens, Ohio.....	Peggy.....		
Al. Bell, Athens, Ohio.....	Dolly.....		
<i>Mare 2 years old and under 3.</i>			
Cobb Gavitt, Ashley, Ohio.....	Daisy.....	Second.....	5 00
W. H. Lucas, Columbus, Ohio.....	Spot.....	First.....	10 00
D. H. Moore, Athens, Ohio.....	Topsy.....		
<i>Filly 1 year old and under 2.</i>			
Cobb Gavitt, Ashley, Ohio.....	Mag.....	First.....	5 00
<i>Filly under 1 year.</i>			
Cobb Gavitt, Ashley, Ohio.....	Kate.....		
D. H. Moore, Athens, Ohio.....	Baby Cassel.....	First.....	3 00

Expert Judges—Mike Bowerman, C. M. Jones, Seth Baughman.

PONY TURNOUTS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Single turnout, driven by boy or girl under 13 years of age.</i>			
Cobb Gavitt, Ashley, Ohio.....		Second.....	\$ 5 00
Alex. Porter, Washington C. H., Ohio.....			
W. H. Lucas, Columbus, Ohio.....		First.....	10 00
<i>Expert Judges—Seth Baughman, Andrew Jackson.</i>			
<i>Double team turnout, driven by boy or girl under 13 years of age.</i>			
Cobb Gavitt, Ashley, Ohio.....		First.....	15 00
Same.....			
W. H. Lucas, Columbus, Ohio.....		Second.....	8 00
<i>Pony race, under saddle, one-half mile heats, 2 in 3, ridden by boys under 13 years of age.</i>			
Ira Seely, Camp Chase, Ohio.....	Wellington Duke.....	First.....	10 00
Harry Brown, Columbus, Ohio.....	Bessie C.....	Second.....	5 00

Expert Judges—Seth Baughman, J. L. Williams, J. N. Ackerman.

HORSES—SWEEPSTAKES FOR COACH HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Coach stallion of any age, breed or class.</i>			
W. O. Maddux, Xenia, Ohio.....	March Past.....	First...	\$15 00
McLaughlin Bros., Columbus, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
Same.....	.....	.....	.....
Same.....	.....	.....	.....
<i>Coach mare of any age, breed or class.</i>			
Ben McMillan, Newark, Ohio.....	Minnie.....	First...	15 00
J. Maxwell, Cardington, Ohio.....	.....	.....	.....
A. R. Miller, Pataskala, Ohio.....	.....	.....	.....

Expert Judge—S. H. Turner.

SWEEPSTAKES FOR FRENCH AND BELGIAN DRAFT HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Draft stallion of any age.</i>			
McLaughlin Bros., Columbus, Ohio.....	Chalet.....	First...	\$15 00
Same.....	.....	.....	.....
<i>Draft mare of any age.</i>			
E. J. Condit, Condit, Ohio.....	Nelly Bly.....	.....	.....
C. M. Jones, Plain City, Ohio.....	Mariri.....	.....	.....
A. J. Torbert, Plain City, Ohio.....	Fillet.....	First...	15 00

Expert Judge—C. H. Ganson.

SWEEPSTAKES FOR SHIRES AND CLYDESDALES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Draft stallion of any age, to be exhibited with four of his colts.</i>			
Charles E. Tuller, Dublin, Ohio.....	Leek Arthur.....	First...	\$25 00
<i>Stallion of any age.</i>			
McLaughlin Bros., Columbus, Ohio.....	Ferdinand.....	First...	15 00
Luther Ropp, Marcy, Ohio.....	.....	.....	.....
<i>Mare of any age.</i>			
A. B. Staley, Bokes Creek, Ohio.....	Lady.....	First...	15 00
T. A. Bazler, Derby, Ohio.....	Mollie.....	.....	.....

Expert Judge—Seth Baughman.

HORSES—SWEEPSTAKES FOR ROADSTERS—STANDARD BRED.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Roadster stallion, to be exhibited with four of his colts.</i>			
A. R. Miller, Pataskala, Ohio.....	.....	First...	\$ 25 00
<i>Roadster stallion of any age.</i>			
Donovan Bros., Cardington, Ohio.....	Toskey D.....	First...	15 00
<i>Roadster mare of any age.</i>			
B. F. Pursell, Reynoldsburg, Ohio.....	Minnie Pursell.....	.....	.....
E. W. Rodebaugh, Reynoldsburg, Ohio.....	Lilly E. ....	.....	.....
Bishop Bros., Jerome, Ohio.....	Lady Chilowee.....	.....	.....
A. R. Miller, Pataskala, Ohio.....	.....	.....	.....
J. A. Hall, Columbus, Ohio.....	Happiness.....	First...	15 00

Expert Judge—Mike Bowerman.

SWEEPSTAKES FOR ROADSTERS—NOT STANDARD BRED.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Roadster stallion, to be exhibited with four of his colts.</i>			
B. F. Pursell, Reynoldsburg, Ohio.....	Columbus Wilkes.....	First...	\$ 25 00
McPerfect, Sunbury, Ohio.....	McGuire.....	.....	.....
<i>Roadster stallion of any age.</i>			
G. W. Cushing, Columbus, Ohio.....	Harry Bonner.....	.....	.....
J. A. Hall, Columbus, Ohio.....	Truro Wilkes.....	.....	.....
A. R. Miller (for F. Egolf), Pataskala, Ohio.....	.....	First...	15 00
<i>Roadster mare of any age.</i>			
C. J. Wright, North Columbus, Ohio.....	Kitty Moore.....	.....	.....
C. V. Keller, Newark, Ohio.....	Minnie K.....	.....	.....
Irvin Millar, Duvall, Ohio.....	Lady Delans.....	.....	.....
D. Westwater, Columbus, Ohio.....	Mary Lee.....	First...	15 00
H. M. Wood, Cardington, Ohio.....	.....	.....	.....
J. Maxwell, Cardington, Ohio.....	.....	.....	.....
A. R. Miller (for P. Manger), Pataskala, Ohio.....	.....	.....	.....

Expert Judges—C. H. Ganson, Seth Baughman, Mike Bowerman.

SUMMARY OF THE RACES.

TWO-YEAR-OLD TROT OR PACE.

Owner's Name and Postoffice.	Name of Animal.	Heats.
L. H. Smith, Arcanum, Ohio.....	Faustina Smith.....	1 1 1
Brown Foster, Spiceland, Ind.....	s. g. Robt. F.....	2 2 4
J. A. Stalter, Atna, Ohio.....	blk. f. Miss Ruth.....	5 4 6
Jno. Sandusky, Columbus, Ohio.....	b. s. Roaster.....	6 6 7
Steen & McCoy, Washington C. H., Ohio.....	gr. f. Katy Burns.....	7 8 8
A. J. Leist & Sons, Circleville, Ohio.....	b. m. Mabel B.....	4 10 3
Elmer E. Powell, Urbana, Ohio.....	s. b. Melton S.....	3 7 2
G. W. Crawford, Newark, Ohio.....	s. f. Baby Ruth.....	10 5 Dis.
C. H. Cadwallader, Union City, Ind.....	ch. m. Winnette.....	9 3 5
D. W. Coble, Westerville, Ohio.....	s. m. Julia Ann Wilkes.....	8 9 Dis.

Time, $\frac{1}{2}$ mile—1:11, 1:11, 1:10 $\frac{1}{2}$.

THREE-YEAR-OLD PACERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.
Jno. A. Hall, Columbus, Ohio.....	b. s. Snow Flake.....	2 3 3
L. H. Smith, Arcanum, Ohio.....	Alfondly.....	1 1 1
McPerfect, Sunbury, Ohio.....	b. s. Homestead.....	4 4 Dis.
S. T. Windom, Athens, Ohio.....	Peter Kern.....	3 2 2

Time—2:28 $\frac{1}{4}$, 2:31 $\frac{1}{2}$, 2:27 $\frac{1}{4}$.

2:22 CLASS TROTTERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.
A. B. Grove, Newark, Ohio.....	b. s. Clayone.....	3 2 2
D. H. Moore, Athens, Ohio.....	Castalia.....	6 6 8
N. R. Butler, Lancaster, Ohio.....	ch. s. Osben.....	8 8 7
W. J. White, Rockport, Ohio.....	ch. m. Lea.....	1 1 1
J. Walport, Dunkirk, N. Y.....	b. g. Chick Bills.....	5 5 5
Tom Purdum, Chillicothe, Ohio.....	Weeden K.....	4 3 6
A. B. Kenaga, Urbana, Ohio.....	b. m. Mnd River Belle.....	2 4 4
S. R. Weaver, Mt. Vernon, Ohio.....	W. H.....	7 7 3

Time—2:23, 2:23, 2:23 $\frac{1}{4}$.

2:25 CLASS PACING.

Owner's Name and Postoffice.	Name of Animal.	Heats.
H. C. House, Pittsburg, Pa.....	g. m. Maud.....	7 3 Dis.
M. O. Stokes, Urbana, Ohio.....	b. m. Belle K.....	5 5 6
Wm. S. Wing, Gambier, Ohio.....	b. g. Billy W.....	Dis.
C. S. Barry, Springfield, Ohio.....	Jack.....	1 1 1
D. H. Moore, Athens, Ohio.....	Telford.....	6 7 5
Frank Hedrick, Blanchester, Ohio.....	Calientia.....	4 6 2
G. W. Glover, Updegraff, Ohio.....	b. m. Bessie B.....	2 2 4
W. J. White, Rockport, Ohio.....	b. s. Plutone.....	3 4 3

Time—2:20 $\frac{1}{4}$, 2:20 $\frac{1}{4}$, 2:19 $\frac{1}{4}$.

ENTRIES AND AWARDS.

2:23 CLASS TROTTERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.		
J. B. Fletcher, Newport, Ky.....	s. g. Honest Duke.....	2	3	4
D. V. Grace, Chillicothe, Ohio.....	ch. s. George Nell.....	8	7	6
Farris Egolf, Aetna, Ohio.....	b. s. McKinley.....	3	5	5
Evan Jones, Granville, Ohio.....	b. m. Allie J.....	7	6	7
S. Blamer, Johnstown, Ohio.....	b. s. Attraction.....	4	2	3
M. Bowerman, Lexington, Ky.....	b. c. Wilburn.....	1	1	1
J. H. Schoenberger, Syracuse, Ohio.....	b. m. Bessie.....	6	8	8
H. D. Kygar, Darrrtown, Ohio.....	br. m. Lucy.....	5	4	2

Time—2:27¼, 2:27, 2:26¾.

2:28 CLASS TROTTERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.		
Ed. Hall, Columbus, Ohio.....	b. m. Happiness.....	2	2	4 4
Burton Case, Granville, Ohio.....	b. g. Hurst.....	9	9	8 10
W. T. Brown, Dayton, Ohio.....	Elma.....	3	3	10 6
Bishop Bros., Jerome, Ohio.....	s. m. Amazon.....	1	10	7 5
A. B. Grove, Newark, Ohio.....	ch. g. Actor.....	8	1	1 1
G. W. Glover, Updegraff, Ohio.....	ch. s. Poneto.....	4	6	9 7
J. B. Buckland, Chillicothe, Ohio.....	b. m. Dakota.....	10	4	6 9
Foster Webb, Hamilton, Ohio.....	br. s. Pantheon B.....	5	5	3 2
W. Y. Graves, Indianapolis, Ind.....	blk. g. Ali.....	6	8	5 8
A. R. Miller, Pataskala, Ohio.....	b. g. Ap. Alert.....	7	7	2 3

Time—2:23¼, 2:23¼, 2:25¼, 2:22¼.

2:40 CLASS PACERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.		
Chas. Seigle, Newark, Ohio.....	br. g. Freddie S.....	6	3	4 5
J. W. Stillwell, Troy, Ohio.....	b. s. Almont D.....	1	2	2 6
J. W. Barger, Waverly, Ohio.....	Dan B.....	2	4	3 2
G. W. Glover, Updegraff, Ohio.....	Black B.....	8	7	Dis.
C. L. Sherwood, Plain City, Ohio.....	br. m. Minnie K.....	4	8	Dis.
Jas. McCormick, Millersburg, Ohio.....	b. g. J. R.....	5	6	5 4
R. W. Purdum, Plain City, Ohio.....	ch. s. Vixen.....	7	5	6 3
S. R. Dunkin, London, Ohio.....	b. g. Geo. K.....	3	1	1 1

Time—2:21¼, 2:21¼, 2:21¼, 2:26¼.

2:19 CLASS TROTTERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.		
W. Y. Graves, Indianapolis, Ind.....	b. g. Ben Wallace.....	1	3	1 2 2
D. Kelly, Columbus, Ohio.....	b. g. Alhambra.....	2	1	2 1 1
L. W. Ellenwood, Chillicothe, Ohio.....	br. s. Oudan.....	3	2	3 3 3

Time—2:23¼, 2:23¼, 2:23¼, 2:21¼, 2:21¼.

2:45 CLASS TROTTERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.
Guttry & Moore, Marion, Ohio.....	g. s. Coaston	6 4 2 3 2.
W. T. Brown, Dayton, Ohio.....	Ed. Kent	2 2 3 2 3
H. D. Kygar, Darrrtown, Ohio.....	br. m. Lucy	3 5 5 1 1
J. H. Schoenberger, Syracuse, Ohio.....	g. g. I. H. S.....	5 6 5 6 5
Jno. McKitrick, Jerome, Ohio	b. m. Ellen B.....	1 1 6 4 4
Clem Beachey, Lebanon, Ohio.....	b. g. Almont Boy.....	4 3 4 5 6

Time—2:30 $\frac{1}{4}$, 2:29 $\frac{1}{4}$, 2:28 $\frac{1}{2}$, 2:26 $\frac{1}{4}$.

FREE FOR ALL PACERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.
V. L. Weakley, Columbus, Ohio	b. g. Jack Bowers.....	1 1 1
Jno. M. Adams, Coshocton, Ohio.....	Pixley Boy.....	3 2 2
C. F. Lyon, Steubenville, Ohio	b. m. Morelia.....	2 3 3

Time—2:15 $\frac{3}{4}$, 2:15, 2:15 $\frac{1}{4}$.

THREE-YEAR-OLD TROTTERS.

Owner's Name and Postoffice.	Name of Animal.	Heats.
M. Bowerman, Lexington, Ky	b. c. Wilburn.....	1 1 1
Warren Bros., Athens, Ohio	Polly T.....	4 4 4
Jonathan Hay, Ashville, Ohio.....	s. s. Elire.....	3 2 2
Geo. O. France, Springfield, Ohio	Gaynelle Hope.....	2 3 2

Time—2:41, 2:33 $\frac{1}{4}$, 2:28.

HURDLE RACE—MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
Jas. Whealdon, Columbus, Ohio.....	b. f. Evening.....	2
W. Havemier, New Lexington, Ohio	b. g. Burns	4
F. E. Keyes, Columbus, Ohio	b. g. Custer.....	3
Robt. Thompson, Columbus, Ohio	ch. g. Lord Russell.....	1

Time—2:04.

ENTRIES AND AWARDS.

RUNNING — MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
J. P. Miller, Paulding, Ohio	b. g. Speculator.....	5
Waddle Bros., Marion, Ohio.....	b. g. Darius	1
Noyes Bros., LaRue, Ohio	ch. s. Bob Ingersol.....	3
E. Paddleford, East St. Louis, Mo.....	ch. g. Starlight.....	2
G. W. Henry, Chillicothe, Ohio.....	s. s. Palestine.....	4

Time — 1:47.

RUNNING — ONE - HALF MILE HEATS.

Owner's Name and Postoffice.	Name of Animal.	Heats.
O. H. Wood, Hanover, Ohio.....	b. g. Target.....	4 2 0
W. H. Grayson, Madison, Ill.....	b. g. Little Fred.....	3 3 0
Bousenger Bros., Marion, Ohio.....	b. g. Marion Star.....	0 1 1
Elmer Brown, Weston, Ohio	b. m. Emma Hooper.....	0 4 2

Time — :51, :51½, :53¼.

SELLING RACE — MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
Noyes Bros., LaRue, Ohio	ch. s. Bob Ingersol.....	1
J. W. Hayes, Washington C. H., Ohio	ch. g. Bugle	3
W. Havemier, New Lexington, Ohio	b. g. Byrne	2
Waddle Bros., Marion, Ohio.....	br. g. Darius.....	4

Time — 1:47½.

RUNNING — MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
E. Paddleford, East St. Louis, Mo.....	ch. g. Starlight.....	1
W. Havemier, New Lexington, Ohio	ch. g. Byrne	3
Waddle Bros., Marion, Ohio.....	br. g. Darius.....	2

Time — 1:47¾.

HURDLE RACE — MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
Jno. Whealdon, Columbus, Ohio.....	b. f. Evening.....	1
F. E. Keyes, Columbus, Ohio.....	Beauford.....	4
Robt. Thompson, Columbus, Ohio.....	ch. g. Lord Russell.....	2
J. P. Miller, Paulding, Ohio.....	b. g. Speculation.....	3

Time — 1:57½.

RUNNING — ONE-HALF MILE HEATS.

Owner's Name and Postoffice.	Name of Animal.	Heats.
Bausinger Bros., Marion, Ohio.....	b. g. Marion Star.....	1 1
W. H. Grayson, Madison, Ill.....	b. g. Little Fred.....	2 3
Thos. A. Gregg, West Jefferson, Ohio.....	Squaball.....	5 4
O. H. Wood, Hanover, Ohio.....	b. g. Target.....	8 5
Elmer Brown, Weston, Ohio.....	b. m. Enima Hooper.....	4 2

Time — :51¼, :51¼.

RUNNING TO HARNESS — MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
W. G. Mathews, Homer, Ohio.....	McGuire.....	1
Chas. Talbot Columbus, Ohio.....	Sam Belknap.....	3
Same.....	Jim Russell.....	2

Time — 2:19.

SPECIAL HURDLE RACE — MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
F. E. Keyes, Columbus, Ohio.....	Custer.....	2
Same.....	Beauford.....	1
Same.....	Richmond.....	—

Time — 2:11.

ENTRIES AND AWARDS.

HANDICAP — MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
Novek Bros., LaRue, Ohio	Bob Ingersol.....	2
E. Paddleford, East St. Louis, Mo.	Starlight.....	1
Robt. Thompson, Columbus, Ohio	Lord Russell.....	3
Jno. Whealdon, Columbus, Ohio	Onfoot.....	4

Time — 1:47 $\frac{3}{4}$.

CONSOLATION RACE — MILE DASH.

Owner's Name and Postoffice.	Name of Animal.	Heat.
J. P. Miller, Paulding, Ohio.....	Bugle.....	3
Thos. A. Gregg, West Jefferson, Ohio.....	b. g. Speculation.....	2
W. Havemier, New Lexington, Ohio.....	Squball.....	5
Elmer Brown, Weston, Ohio	ch. g. Byrne.....	1
	b. m. Emma Hooper.....	4

Time — 1:49 $\frac{1}{4}$.

CATTLE — SHORTHORNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
Aaron Barber, Avon, N. Y.	Young Marshall.....	Second.	\$ 10 00
Kellogg Stock Farm Co., Claridon, Ohio.....	Surprisus King.....	.....	.....
C. L. Gerlaugh, Osborn, Ohio.....	.....	.....	.....
D. M. Evans & Co., Venedocia, Ohio.....	.....	First.	20 00
<i>Bull 2 years old and under 3.</i>			
Aaron Barber, Avon, N. Y.....	Forest Grove Abbotsburn...	Second.	10 00
C. L. Gerlaugh, Osborn, Ohio.....	.....	First.	20 00
<i>Bull 1 year old and under 2.</i>			
Kellogg Stock Farm Co., Claridon, Ohio.....	Baron Violet.....	.....	.....
C. L. Gerlaugh, Osborn, Ohio.....	.....	.....	.....
Virginia C. Meredith, Cambridge City, Ind.....	Secret Victor.....	Second.	5 00
D. M. Evans & Co., Venedocia, Ohio.....	.....	First.	10 00
<i>Bull calf.</i>			
Aaron Barber, Avon, N. Y.....	Sharon Marshall.....	First.	10 00
Kellogg Stock Farm Co., Claridon, Ohio.....	.....	Second.	5 00
Same.....	.....	.....	.....
C. L. Gerlaugh, Osborn, Ohio.....	.....	.....	.....
Virginia C. Meredith, Cambridge City, Ind.....	Bromley.....	.....	.....
Same.....	Marlowe.....	.....	.....
D. M. Evans & Co., Venedocia, Ohio.....	.....	.....	.....
<i>Cow 3 years old and over.</i>			
Aaron Barber, Avon, N. Y.....	Lady Waterloo.....	.....	.....
Same.....	Lady Sharon.....	.....	.....
Same.....	Waterloo Lass.....	.....	.....
Same.....	Necklace 20th.....	First.	15 00
Kellogg Stock Farm Co., Claridon, Ohio.....	Fannie Andrie 19th.....	Second.	10 00
Same.....	Oakland Lady 6th.....	.....	.....
C. L. Gerlaugh, Osborn, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
D. M. Evans & Co., Venedocia, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
<i>Cow or heifer 2 years old and under 3.</i>			
Aaron Barber, Avon, N. Y.....	Mary Abbotsburn 7th.....	First.	10 00
Kellogg Stock Farm Co., Claridon, Ohio.....	Chensy Knight 18th.....	.....	.....
C. L. Gerlaugh, Osborn, Ohio.....	.....	.....	.....
D. M. Evans & Co., Venedocia, Ohio.....	.....	Second.	5 00
<i>Heifer 1 year old and under 2.</i>			
Aaron Barber, Avon, N. Y.....	Lady Sharon 2d.....	Second.	5 00
Same.....	Waterloo Girl.....	.....	.....
Kellogg Stock Farm Co., Claridon, Ohio.....	Stella 2d.....	.....	.....
C. L. Gerlaugh, Osborn, Ohio.....	.....	First.	10 00
D. M. Evans & Co., Venedocia, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
Same.....	.....	.....	.....
<i>Heifer calf.</i>			
Aaron Barber, Avon, N. Y.....	Belle Marshall.....	First.	10 00
Kellogg Stock Farm Co., Claridon, Ohio.....	Oakland Lady 8th.....	.....	.....
C. L. Gerlaugh, Osborn, Ohio.....	.....	.....	.....
D. M. Evans & Co., Venedocia, Ohio.....	.....	Second.	5 00
Same.....	.....	.....	.....

CATTLE—SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
<i>Herd of one bull, one cow 3 years old or over, one cow or heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer under 1 year old, all owned by the exhibitor.</i>			
Aaron Barber, Avon, N. Y.	First ...	\$ 40 00
Kellogg Stock Farm Co., Claridon, Ohio.....
C. L. Gerlaugh, Osborn, Ohio.....
D. M. Evans & Co., Venedocia, Ohio.....
BREEDER'S HERDS.			
<i>Herd of one bull and four females of any age, the bulls to be owned and the females owned and bred by the exhibitor.</i>			
Aaron Barber, Avon, N. Y.	First ...	40 00
Kellogg Stock Farm Co., Claridon, Ohio.
C. L. Gerlaugh, Osborn, Ohio.....
D. M. Evans & Co., Venedocia, Ohio.....
<i>Four animals of either sex under 4 years of age, the get of one bull, to be owned at the time of get being sired, and the get owned and bred by the exhibitor.</i>			
Kellogg Stock Farm Co., Claridon, Ohio.....
C. L. Gerlaugh, Osborn, Ohio.....
D. M. Evans & Co., Venedocia, Ohio.....	First ...	30 00

Expert Judge—G. W. Hiskett.

DEVONS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	Butterworth	First ...	20 00
<i>Bull 2 years old and under 3.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	John H	First ...	20 00
<i>Bull 1 year old and under 2.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	Cooley 2d	First ...	10 00
<i>Bull calf.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	.....	First ...	10 00
Same .....	.....	Second ..	5 00
<i>Cow 3 years old and over.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	Leda Hebe .....	.....	.....
Same	Jane Eyre.....	First ...	15 00
Same	Jessica	Second ..	10 00
<i>Cow or heifer 2 years old and under 3.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	Charlotte Bronte	Second ..	5 00
Same	Jennie June 2d	First ...	10 00
<i>Heifer 1 year old and under 2.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	Cleopatra 2d .....	.....	.....
Same .....	.....	.....	.....

CATTLE — DEVONS — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Heifer calf.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	First ...	\$10 00
Same	Second ..	5 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
<i>Herd of one bull, one cow 3 years old or over, one cow or heifer 2 years old and under 3, one heifer 1 year old and under 2, and 1 heifer under 1 year old, all owned by the exhibitor.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	First ...	40 00
BREEDER'S HERDS.			
<i>Herd of one bull and four females of any age, the bull to be owned and the females owned and bred by the exhibitor.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	First ...	40 00
<i>Four animals of either sex under 4 years of age, the get of one bull, to be owned at the time of get being sired, and the get owned and bred by the exhibitor.</i>			
D. J. Whitmore & Co., Casstown, Ohio.....	First ...	30 00

Expert Judge — G. W. Hiskett.

JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
A. H. Cooley, Little Britain, N. Y.	Mackennack 2d.....	First ...	\$20 00
Same	Pedro 6th	Second ..	10 00
Mrs. A. M. Hallock, Columbus, Ohio.....	Nestor of St. Lambert. ....	.....	.....
Lewis Dinniger, Greenville, Ohio.....	Captain Ned .....	.....	.....
<i>Bull 2 years old and under 3.</i>			
A. H. Cooley, Little Britain, N. Y.	Frolicsome.....	.....	.....
Mrs. A. M. Hallock, Columbus, Ohio.....	Poets Dream of St. L.....	First ...	20 00
Lewis Dinniger, Greenville, Ohio.....	Harry Boy	Second ..	10 00
<i>Bull 1 year old and under 2.</i>			
Mrs. M. A. Hallock, Columbus, Ohio.....	Victor Hugo	First ...	10 00
Same	Orphan Boy of St. L.....	.....	.....
Same	Sallie's Exile of St. L.....	Second ..	5 00

CATTLE—JERSEYS—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull calf.</i>			
A. H. Cooley, Little Britain, N. Y.	Niobe Girl's Beauty	First	\$10 00
Mrs. A. M. Hallock, Columbus, Ohio.	Nestor of St. Lambert 12th	Second	5 00
Same			
Lewis Dinniger, Greenville, Ohio.			
<i>Cow 3 years old and over.</i>			
A. H. Cooley, Little Britain, N. Y.	Monmouth Lady		
Same	Tog	First	15 00
Mrs. A. M. Hallock, Columbus, Ohio.	Meine 2d	Second	10 00
Same	Elinor Wells 2d		
Same	Nestor's Beauty of St. L.		
Lewis Dinniger, Greenville, Ohio.	Certe 3d		
Same	Lady Fawnette		
<i>Cow or heifer 2 years old and under 3.</i>			
A. H. Cooley, Little Britain, N. Y.	My Lady Angetta	First	10 00
Same	Flower of Cavoril 3d		
Same	Lady Minette		
Mrs. A. M. Hallock, Columbus, Ohio.	Pappy of St. Lambert	Second	5 00
Lewis Dinniger, Greenville, Ohio.	Polly Anthy Rose		
<i>Heifer 1 year old and under 2.</i>			
A. H. Cooley, Little Britain, N. Y.	Mackenack's Gem		
Same	Rufus Pride	Second	5 00
Same	Rufus Gem		
Mrs. A. M. Hallock, Columbus, Ohio.	Sweet Brier of St. Anne		
Same	Queen of all Flowers	First	10 00
Same	Hazel of St. Lambert 2d		
Same	Nestor's Lady Woodbine		
Lewis Dinniger, Greenville, Ohio.			
<i>Heifer calf.</i>			
A. H. Cooley, Little Britain, N. Y.	Rufus Dolly		
Same	Rufus Mary Ann	First	10 00
Mrs. A. M. Hallock, Columbus, Ohio.	Exile's Star Pogis		
Same	Nestor's Meine of St. L.		
Same	Exile's Dainty Riotor		
Same	Golden Hope	Second	5 00
Same	St. Anne's Careta		
Same	Sweet Clover Blossom		
Lewis Dinniger, Greenville, Ohio.			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
<i>Herd of one bull, one cow 3 years old or over, one cow or heifer 2 years old and under 3, one heifer 1 year old and under 2, and 1 heifer under 1 year old, all owned by the exhibitor.</i>			
A. H. Cooley, Little Britain, N. Y.		First	\$40 00
Mrs. A. M. Hallock, Columbus, Ohio.			
Lewis Dinniger, Greenville, Ohio.			

CATTLE — SWEEPSTAKES — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
BREEDERS' HERDS.			
<i>Herd of one bull and four females of any age, the bull to be owned and the females owned and bred by the exhibitor.</i>			
A. H. Cooley, Little Britain, N. Y.....
Mrs. A. M. Hallock, Columbus, Ohio.....
Lewis Dinniger, Greenville, Ohio.....	First	\$ 40 00
<i>Four animals of either sex under 4 years of age, the get of one bull, to be owned at the time of get being sired, and the get owned and bred by the exhibitor.</i>			
A. H. Cooley, Little Britain, N. Y.....	First	30 00

Expert Judge — C. S. Plumb.

AYRSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
George H. Bell, Rome, N. Y.....	King of the Park 5th.....	Second	\$ 10 00
J. P. Beatty, Pataskala, Ohio.....	Tallahassa.....	First	20 00
<i>Bull 2 years old and under 3.</i>			
J. P. Beatty, Pataskala, Ohio.....	Jo Jo.....	First	20 00
<i>Bull 1 year old and under 2.</i>			
Geo. H. Bell, Rome, N. Y.....	Columbian King.....	First	10 00
J. P. Beatty, Pataskala, Ohio.....	Wapeta.....	Second	5 00
<i>Bull calf.</i>			
Geo. H. Bell, Rome, N. Y.....	Prince Trisham.....	Second	5 00
J. P. Beatty, Pataskala, Ohio.....	Torpedo.....	First	10 00
<i>Cow 3 years old and over.</i>			
Geo. H. Bell, Rome, N. Y.....	Lady Winfield.....	.....	.....
Same.....	Lady Stryker.....	.....	.....
J. P. Beatty, Pataskala, Ohio.....	Cleopatra.....	.....	.....
Same.....	Lady Jewess 2d.....	Second	10 00
Same.....	Mazeppa.....	First	15 00
<i>Cow or heifer 2 years old and under 3.</i>			
Geo. H. Bell, Rome, N. Y.....	Lady Winfield 2d.....	Second	5 00
J. P. Beatty, Pataskala, Ohio.....	Vina.....	First	10 00
<i>Heifer 1 year old and under 2.</i>			
Geo. H. Bell, Rome, N. Y.....	Columbian Queen.....	Second	5 00
Same.....	Buttercup's Belle.....	.....	.....
J. P. Beatty, Pataskala, Ohio.....	Hazel.....	First	10 00
<i>Heifer calf.</i>			
Geo. H. Bell, Rome, N. Y.....	Beauty of Riverside.....	First	10 00
Same.....	Esther of Riverside.....	Second	5 00
J. P. Beatty, Pataskala, Ohio.....	Rhoda.....	.....	.....

CATTLE — SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
<i>Herd of one bull, one cow 3 years old or over, one cow or heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer under 1 year old, all owned by the exhibitor.</i>			
Geo. H. Bell, Rome, N. Y.	First ...	\$ 40 00
J. P. Beatty, Pataskala, Ohio
BREEDERS' HERDS.			
<i>Herd of one bull and four females of any age, the bull to be owned and the females owned and bred by the exhibitor.</i>			
Geo. H. Bell, Rome, N. Y.	First ...	40 00
J. P. Beatty, Pataskala, Ohio
<i>Four animals of either sex under 4 years of age, the get of one bull, to be owned at the time of get being sired, and the get owned and bred by the exhibitor.</i>			
Geo. H. Bell, Rome, N. Y.	First ...	30 00
J. P. Beatty, Pataskala, Ohio

Expert Judge — C. S. Plumb.

HOLSTEINS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
W. B. Smith & Son, Columbus, Ohio.	Aaggie Beauty 2d Statesman.	First ...	\$ 20 00
Link Burnham & Bro., Woodstock, Ohio.	Friends Boelyn.	Second ..	10 00
Wesley Purdam (agent), Chillicothe, Ohio. ....	.....	.....	.....
Same .....	.....	.....	.....
<i>Bull 2 years old and under 3.</i>			
Link Burnham & Bro., Woodstock, Ohio.	Nellie Burk.	Second ..	10 00
Wesley Purdam (agent), Chillicothe, Ohio. ....	.....	First ...	20 00
<i>Bull 1 year old and under 2.</i>			
W. B. Smith & Son, Columbus, Ohio.	Vasaline's Statesman.	Second ..	5 00
Link Burnham & Bro., Woodstock, Ohio.	Boelyn of Grasmere. ....	.....	.....
Same	Pietertza of Grasmere.	First ...	10 00
Wesley Purdam (agent), Chillicothe, Ohio. ....	.....	.....	.....
<i>Bull calf.</i>			
W. B. Smith & Son, Columbus, Ohio.	Apple Pie.	First ...	10 00
Same	Export	Second ..	5 00
Link Burnham & Bro., Woodstock, Ohio. ....	.....	.....	.....
Same .....	.....	.....	.....
Wesley Purdam (agent), Chillicothe, Ohio. ....	.....	.....	.....
Same .....	.....	.....	.....

CATTLE—HOLSTEINS—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Cow 3 years old and over.</i>			
W. B. Smith & Son, Columbus, Ohio.	Vaseline.	First ...	\$ 15 00
Same.	Adventuress 3d. ....	.....	.....
Same.	Nancy Dewdrop 2d.	Second.	10 00
Link Burnham & Bro., Woodstock, Ohio.	Regola 4th. ....	.....	.....
Same.	Fannie Reurke. ....	.....	.....
Wesley Purdam, Chillicothe, Ohio. ....	.....	.....	.....
Same. ....	.....	.....	.....
<i>Cow or heifer 2 years old and under 3.</i>			
W. B. Smith & Son, Columbus, Ohio.	Salina Fairmont 2d.	First ...	10 00
Link Burnham & Bro., Woodstock, Ohio.	Hazel Boelyn. ....	.....	.....
Same.	Lady Huebsche. ....	.....	.....
Wesley Purdam, Chillicothe, Ohio. ....	.....	Second.	5 00
Same. ....	.....	.....	.....
<i>Heifer 1 year old and under 2.</i>			
W. B. Smith & Son, Columbus, Ohio.	Nieta 2d.	Second.	5 00
Link Burnham & Bro., Woodstock, Ohio.	Dells Boelyn. ....	.....	.....
Same.	Bodera Lincoln of Grasmere. ....	.....	.....
Wesley Purdam (agent), Chillicothe, Ohio. ....	.....	First ...	10 00
Same. ....	.....	.....	.....
<i>Heifer calf.</i>			
W. B. Smith & Son, Columbus, Ohio.	Mary Hilton.	First ...	10 00
Same.	Skeeter.	Second.	5 00
Link Burnham & Bro., Woodstock, Ohio. ....	.....	.....	.....
Same. ....	.....	.....	.....
Wesley Purdam (agent), Chillicothe, Ohio. ....	.....	.....	.....
Same. ....	.....	.....	.....

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
<i>Herd of one bull, one cow 3 years old or over, one cow or heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer under 1 year old, all owned by the exhibitor.</i>			
W. B. Smith & Son, Columbus, Ohio.	First ...	\$ 40 00
Link Burnham & Bro., Woodstock, Ohio.
Wesley Purdam (agent), Chillicothe, Ohio.
BREEDERS' HERDS.			
<i>Herd of one bull and four females of any age, the bull to be owned and the females owned and bred by the exhibitor.</i>			
W. B. Smith & Son, Columbus, Ohio.	First ...	40 00
Wesley Purdam (agent), Chillicothe, Ohio.
<i>Four animals of either sex under 4 years of age, the get of one bull, to be owned at the time of get being sired, and the get owned and bred by the exhibitor.</i>			
W. B. Smith & Son, Columbus, Ohio.
Wesley Purdam (agent), Chillicothe, Ohio.	First ...	30 00

Expert Judge—C. S. Plumb.

CATTLE—BLACK POLL.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	Zaire 5th	First ...	\$ 20 00
<i>Bull 2 years old and under 3.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	Quinto of Meadow Brook...	First . .	20 00
<i>Bull 1 year old and under 2.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	Burley	First ...	10 00
<i>Bull calf.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	Leroy	First ...	10 00
<i>Cow 3 years old and over.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	Bonnie	Second .	10 00
Same	Lavender	First ...	15 00
<i>Cow or heifer 2 years old and under 3.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	Bess	Second .	5 00
Same	Lillian	First ...	10 00
<i>Heifer 1 year old and under 2.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	Bernice	First ...	10 00
Same	Bertha	Second .	5 00
<i>Heifer calf.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	Lady	First ...	10 00
Same	Bonita	Second .	5 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
<i>Herd of one bull, one cow 3 years old or over, one cow or heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer under 1 year old, all owned by the exhibitor.</i>			
D. Bradfute & Son, Cedarville, Ohio.	First ...	\$ 40 00
BREEDERS' HERDS.			
<i>Herd of one bull and four females of any age, the bull to be owned and the females owned and bred by the exhibitor.</i>			
D. Bradfute & Son, Cedarville, Ohio.	First ...	40 00
<i>Four animals of either sex under 4 years of age, the get of one bull, to be owned at the time of get being sired, and the get owned and bred by the exhibitor.</i>			
D. Bradfute & Son, Cedarville, Ohio.....	First ...	30 00

Expert Judge—G. W. Hiskett.

CATTLE—RED POLL.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
V. T. Hills, Delaware, Ohio.....	The Ensign.....	First...	\$20 00
J. H. Stormont, Cedarville, Ohio.....	Solomon.....	Second..	10 00
<i>Bull 2 years old and under 3.</i>			
J. H. Stormont, Cedarville, Ohio.....	Adjutant.....	Second..	10 00
J. W. Vaughan & Son, Cardington, Ohio.....	Lucre.....	First...	20 00
<i>Bull 1 year old and under 2.</i>			
V. T. Hills, Delaware, Ohio.....	Tristram.....	First...	10 00
J. H. Stormont, Cedarville, Ohio.....	Major.....	Second..	5 00
<i>Bull calf.</i>			
V. T. Hills, Delaware, Ohio.....	Nananda.....	.....	.....
J. H. Stormont, Cedarville, Ohio.....	.....	Second..	5 00
J. W. Vaughan & Son, Cardington, Ohio.....	Little Bill.....	First...	10 00
<i>Cow 3 years old and over.</i>			
V. T. Hills, Delaware, Ohio.....	Gleeful.....	.....	.....
Same.....	Nanny.....	Second..	10 00
J. H. Stormont, Cedarville, Ohio.....	Asparia.....	.....	.....
J. W. Vaughan & Son, Cardington, Ohio.....	Lady of the Park.....	.....	.....
Same.....	Bee.....	First...	15 00
Same.....	Jeanette.....	.....	.....
<i>Cow or heifer 2 years old and under 3.</i>			
V. T. Hills, Delaware, Ohio.....	Ultrada 2d.....	Second..	5 00
Same.....	Glee.....	First...	10 00
J. H. Stormont, Cedarville, Ohio.....	Nector Beauty.....	.....	.....
<i>Heifer 1 year old and under 2.</i>			
V. T. Hills, Delaware, Ohio.....	Christy.....	Second..	5 00
Same.....	Rocklet.....	First...	10 00
J. H. Stormont, Cedarville, Ohio.....	Alice.....	.....	.....
<i>Heifer calf.</i>			
V. T. Hills, Delaware, Ohio.....	Glisten.....	Second..	5 00
Same.....	Lady Bright.....	.....	.....
J. W. Vaughan & Son, Cardington, Ohio.....	Jose.....	.....	.....
Same.....	Lady Low.....	First...	10 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
<i>Herd of one bull, one cow 3 years old or over, one cow or heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer under 1 year old, all owned by the exhibitor.</i>			
V. T. Hills, Delaware, Ohio.....	The Ensign, No. 3096, and females.....	First...	\$40 00

CATTLE—SWEEPSTAKES—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
BREEDERS' HERDS.			
<i>Herd of one bull and four females of any age, the bull to be owned and the females owned and bred by the exhibitor.</i>			
V. T. Hills, Delaware, Ohio.....	Tristram and females.....	First	\$ 40 00
J. H. Stormont, Cedarville, Ohio.....			
<i>Four animals of either sex under 4 years of age, the get of one bull, to be owned at the time of get being sired, and the get owned and bred by the exhibitor.</i>			
V. T. Hills, Delaware, Ohio.....		First	30 00
J. H. Stormont, Cedarville, Ohio.....			

Expert Judge—G. W. Hiskett.

POLLED DURHAMS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
J. H. Miller, Mexico, Ind	Young Hamilton.....	First	\$ 20 00
<i>Bull 1 year old and under 2.</i>			
J. H. Miller, Mexico, Ind	Gay Monarch.....	First	10 00
<i>Bull calf.</i>			
J. H. Miller, Mexico, Ind.	Red Rose Duke.....	First	10 00
<i>Cow 3 years old and over.</i>			
J. H. Miller, Mexico, Ind.	Lorena.....	First	15 00
Same	Model.....	Second	10 00
<i>Cow or heifer 2 years old and under 3.</i>			
J. H. Miller, Mexico, Ind	Kitty Wells.....	Second	5 00
Same	Red Rose 54th.....	First	10 00
<i>Heifer 1 year old and under 2.</i>			
J. H. Miller, Mexico, Ind.	Dora.....	Second	5 00
Same	Ophelia Beauty 4th.....	First	10 00
<i>Heifer calf.</i>			
J. H. Miller, Mexico, Ind.	Lilly Langtry 4th.....	Second	5 00
Same	Lilly Langtry 3d.....	First	10 00

CATTLE — SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
<i>Herd of one bull, one cow 3 years old or over, one cow or heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer under 1 year old, all owned by the exhibitor.</i>			
J. H. Miller, Mexico, Ind	First ...	\$ 40 00
BREEDERS' HERDS.			
<i>Herd of one bull and four females of any age, the bull to be owned and the females owned and bred by the exhibitor.</i>			
J. H. Miller, Mexico, Ind	First ...	40 00
<i>Four animals of either sex under 4 years of age, the get of one bull, to be owned at the time of get being sired, and the get owned and bred by the exhibitor.</i>			
J. H. Miller, Mexico, Ind	First ...	30 00

Expert Judge—G. W. Hiskett.

GRAND SWEEPSTAKES FOR BEEF BREEDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Herd of one bull and four cows or heifers, all of one breed and owned exclusively by the exhibitor.</i>			
Aaron Barber, Avon, N. Y.
D. Bradfute & Son, Cedarville, Ohio.	First ...	S. cup
Kellogg Stock Farm Company, Claridon, Ohio.
J. H. Miller, Mexico, Ind

Expert Judges—G. W. Hiskett, Benj. M. Allen.

GRAND SWEEPSTAKES FOR DAIRY BREEDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Herd of one bull and four cows or heifers, all of one breed and owned exclusively by the exhibitor.</i>			
Geo. H. Bell, Rome, N. Y.
A. H. Cooley, Little Britain, N. Y.
Mrs. A. M. Hallock, Columbus, Ohio.
W. B. Smith & Son, Columbus, Ohio.	First ...	S. cup

Expert Judge—C. S. Plumb.

THE OHIO STATE DAIRY TEST.

For seven years the State Board of Agriculture has maintained a State Dairy Test, in which the general plan has been changed in but one particular, namely; instead of making the test on the Fair Grounds during the Fair, it is made at the home of the cow under normal and natural conditions, and at a time and season which best suits the owner.

During the seven years the entries have varied very much, running as low as three in number, and as high as ten. A more marked characteristic of the test is observed in the breeds entered. During all these seven years not one Guernsey, nor one Ayrshire, has been entered, all of these preferring to remain on neutral ground rather than take the chances of defeat. The interest seems to have developed very slowly, the above named breeds not entering at all, and the others only in a very limited way. A summary of the seven years test shows that there have been twenty-six entries of the Holsteins, eleven Red Polled, four Jerseys, and one Shorthorn.

From the beginning of this test (seven years ago) the highest number pounds of milk produced by one cow in twenty-four hours was given by a cow owned by W. B. Smith & Son, Columbus, Ohio; quantity, 84.62 pounds.

The largest yield of butter fat produced within the last four years in this test in twenty-four hours was from a cow of the same herd; quantity of fat 2.44 pounds.

This same firm of W. B. Smith & Son have taken a deep interest in the milk test, having entered more cows than any other breeders, and this year gave fifty dollars with the hope of drawing out some good individuals to compete for the prizes.

The following table gives the points of interest, including the name and breed of each cow, age, date of last calf, date of test, total weight of milk given in twenty-four hours, per cent. of butter fat, per cent. of solids not fat, and per cent. of total solids:

THE STATE DAIRY TEST BY STATE BOARD OF AGRICULTURE AND OHIO AGRICULTURAL EXPERIMENT STATION.

Name of Cow.	Age.	Date of Last Calf.	Date of Test.	Total Yield Milk Pounds.	Per Cent. Fat.	Per Cent. Solids Not Fat.	Pounds Fat.	Pounds Solids Not Fat.	Total Per Cent. Solids.
Orphia III	6 years	December 10, 1894	December 24, 1894	56.062	3.40	9.40	1.90	5.27	12.80
Needy	6 years	February 23, 1895	May 10, 1895	61.687	3.20	8.54	1.97	5.27	11.74
Kate Edge	13 years	March 8, 1895	May 10, 1895	57.125	3.40	8.92	1.94	5.09	12.32
Verbell May	3 years	April 17, 1895	May 10, 1895	69.975	2.80	9.00	1.95	6.28	11.80
Lady of Lyons VI	5 years	May 1, 1895	May 20, 1895	72.875	2.90	8.65	2.11	6.30	11.55

The above table shows five entries, all Holsteins. Four of these were entered by W. B. Smith & Son, of Columbus, Ohio, and one by C. W. Horr, of Wellington, Ohio. During these tests, as in former years, the cows have been placed by their owners in the hands of the tester, and subject to his directions. I have personally examined each cow tested and found them milked perfectly clean, and have been careful to see that the final milking was not extended over the twenty-four hours.

The first premium of thirty dollars is for the largest yield of fat; second premium of twenty dollars for next largest quantity of fat. First belongs to Lady of Lyons VI., owned by Mrs. Esther Horr, of Wellington, Ohio. Second to Needy, owned by W. B. Smith & Son, of Columbus, Ohio. Yield of the first, 2.11 pounds butter fat; yield of the second, 1.99 pounds.

For largest yield of solids not including fat, first prize to Lady of Lyons VI., owned by Mrs. Esther Horr, of Wellington, Ohio; second to Verbell May, owned by W. B. Smith & Son, Columbus, Ohio; the first giving 6.30 pounds of solids not fat and the second 6.28 pounds.

The cow Lady of Lyons was tested a second time three weeks after the test given in the table, and gave a yield of 82.16 pounds of milk. This test was lower both in per cent., butter fat and in solids not fat, possibly due in part to a cold rain, which lasted for a full hour, just before she was put under test.

Respectfully submitted,

J. FREMONT HICKMAN, *Tester.*

SHEEP — MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
R. D. Williamson, Xenia, Ohio
J. M. Flanagan, West Jefferson, Ohio
U. Cook, West Mansfield, Ohio
J. Lovett & Sons, Quincy, Ohio	Second ..	\$ 5 00
S. Blamer, Johnstown, Ohio	First ..	10 00
D. W. Evans, Venedocia, Ohio
H. G. McDowell, Canton, Ohio
<i>Ram 1 year old and under 2.</i>			
Wilson Bros., Fredericktown, Ohio
R. D. Williamson, Xenia, Ohio
J. M. Flanagan, West Jefferson, Ohio	Second ..	5 00
S. Blamer, Johnstown, Ohio	First ..	10 00
<i>Ram lamb.</i>			
Wilson Bros., Fredericktown, Ohio
R. D. Williamson, Xenia, Ohio	Second ..	3 00
J. M. Flanagan, West Jefferson, Ohio	First ..	5 00
J. Lovett & Sons, Quincy, Ohio
S. Blamer, Johnstown, Ohio
H. G. McDowell, Canton, Ohio
<i>Ewe over 2 years old.</i>			
R. D. Williamson, Xenia, Ohio	Second ..	5 00
Same
J. M. Flanagan, West Jefferson, Ohio
Same
U. Cook, West Mansfield, Ohio
Same
J. Lovett & Sons, Quincy, Ohio
S. Blamer, Johnstown, Ohio	First ..	10 00
H. G. McDowell, Canton, Ohio
<i>Ewe under 2 years old.</i>			
R. D. Williamson, Xenia, Ohio
J. M. Flanagan, West Jefferson, Ohio	First ..	10 00
J. Lovett & Sons, Quincy, Ohio
S. Blamer, Johnstown, Ohio	Second ..	5 00
H. G. McDowell, Canton, Ohio
<i>Ewe lamb.</i>			
Wilson Bros., Fredericktown, Ohio
R. D. Williamson, Xenia, Ohio	Second ..	3 00
J. Lovett & Sons, Quincy, Ohio
S. Blamer, Johnstown, Ohio
H. G. McDowell, Canton, Ohio	First ..	5 00

Expert Judge — James W. Moore.

SHEEP — DELAINE MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
A. T. Gamber, Wakeman, Ohio.....		Second	\$5 00
Wilson Bros., Fredericktown, Ohio.....			
R. D. Williamson, Xenia, Ohio.....			
John W. Carpenter, Batesville, Ohio.....			
J. M. Flanagan, West Jefferson, Ohio.....			
W. P. Penry & Bro., Radnor, Ohio.....			
H. G. McDowell, Canton, Ohio.....		First	10 00
<i>Ram 1 year old and under 2.</i>			
A. T. Gamber, Wakeman, Ohio.....		Second	5 00
Wilson Bros., Fredericktown, Ohio.....		First	10 00
R. D. Williamson, Xenia, Ohio.....			
Same			
J. W. Carpenter, Batesville, Ohio.....			
J. M. Flanagan, West Jefferson, Ohio.....			
J. L. Deringer, Marion, Ohio.....			
W. P. Penry & Bro., Radnor, Ohio.....			
H. G. McDowell, Canton, Ohio.....			
A. T. Gamber, Wakeman, Ohio.....			
<i>Ram lamb.</i>			
A. T. Gamber, Wakeman, Ohio.....		First	5 00
Same		Second	3 00
Wilson Bros., Fredericktown, Ohio.....			
R. D. Williamson, Xenia, Ohio.....			
J. W. Carpenter, Batesville, Ohio.....			
Same			
U. Cook, West Mansfield, Ohio.....			
W. P. Penry & Bro., Radnor, Ohio.....			
H. G. McDowell, Canton, Ohio.....			
<i>Ewe over 2 years old.</i>			
A. T. Gamber, Wakeman, Ohio.....			
Same			
R. D. Williamson, Xenia, Ohio.....			
Same			
J. W. Carpenter, Batesville, Ohio.....			
J. M. Flanagan, West Jefferson, Ohio.....		Second	5 00
Same			
U. Cook, West Mansfield, Ohio.....			
W. P. Penry & Bro., Radnor, Ohio.....			
Same			
H. G. McDowell, Canton, Ohio.....		First	10 00
Same			
<i>Ewe under 2 years old.</i>			
A. T. Gamber, Wakeman, Ohio.....	Pride.....		
Wilson Bros., Fredericktown, Ohio.....		First	10 00
R. D. Williamson, Xenia, Ohio.....			
J. W. Carpenter, Batesville, Ohio.....			
J. M. Flanagan, West Jefferson, Ohio.....			
Same			
W. P. Penry & Bro., Radnor, Ohio.....			
Same			
H. G. McDowell, Canton, Ohio.....			
Same			
A. T. Gamber, Wakeman, Ohio.....		Second	5 00
Same			
<i>Ewe lamb.</i>			
A. T. Gamber, Wakeman, Ohio.....		First	5 00
Same		Second	3 00
Wilson Bros., Fredericktown, Ohio.....			
R. D. Williamson, Xenia, Ohio.....			
Same			
J. W. Carpenter, Batesville, Ohio.....			
W. P. Penry & Bro., Radnor, Ohio.....			
Same			

Expert Judge — James W. Moore.

SHEEP — FRENCH MERINOS — RAMBOUILLET.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
O. E. Lincoln & Son, Milford Center, Ohio.....	First	\$10 00
Same	Second	5 00
A. A. Bates, Irwin, Ohio.....
<i>Ram 1 year old and under 2.</i>			
O. E. Lincoln & Son, Milford Center, Ohio.....	First	10 00
Same	Second	5 00
<i>Ram lamb.</i>			
O. E. Lincoln & Son, Milford Center, Ohio.....	First	5 00
Same	Second	3 00
A. A. Bates, Irwin, Ohio.....
Same
<i>Ewe over 2 years old.</i>			
O. E. Lincoln & Son, Milford Center, Ohio.....	Second	5 00
Same
A. A. Bates, Irwin, Ohio.....
Same
H. G. McDowell, Canton, Ohio	First	10 00
<i>Ewe under 2 years old.</i>			
O. E. Lincoln & Son, Milford Center, Ohio	First	10 00
Same
A. A. Bates, Irwin, Ohio	Second	5 00
Same
<i>Ewe Lamb.</i>			
O. E. Lincoln & Son, Milford Center, Ohio	Second	3 00
Same
A. A. Bates, Irwin, Ohio	First	5 00
Same

Expert Judge—James W. Moore.

LONG WOOLS.

To include Lincolns, Cotswolds and Leicesters.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
D. B. & R. C. Watt, Xenia, Ohio.....
Same
W. U. Noble, Brecksville, Ohio.....
Wilsons & Woodford, Muncie, Ind.....	Second	\$5 00
John Andregg, Basil, Ohio.....
Geo. Harding & Son, Waukesha, Wis.....	First	10 00
Same
<i>Ram 1 year old and under 2.</i>			
D. B. & R. C. Watt, Xenia, Ohio.....
W. U. Noble, Brecksville, Ohio.....
Wilsons & Woodford, Muncie, Ind.....
John Andregg, Basil, Ohio.....
Geo. Harding & Son, Waukesha, Wis.....	First	10 00
Same	Second	5 00

S A. R.

SHEEP — LONG WOOLS — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram Lamb.</i>			
D. B. & R. C. Watt, Xenia, Ohio
Same
W. U. Noble, Brecksville, Ohio
Same
Wilsons & Woodford, Muncie, Ind.	Second ..	\$3 00
Same
John Andregg, Basil, Ohio
Geo. Harding & Son, Waukesha, Wis.	First	5 00
Same
<i>Expert Judge — S. H. Todd.</i>			
<i>Ewe over 2 years old.</i>			
D. B. & R. C. Watt, Xenia, Ohio
Same
W. U. Noble, Brecksville, Ohio
Wilsons & Woodford, Muncie, Ind.
Same
Same
John Andregg, Basil, Ohio
Geo. Harding & Son, Waukesha, Wis.	First	10 00
Same	Second ..	5 00
<i>Ewe under 2 years old.</i>			
D. B. & R. C. Watt, Xenia, Ohio
W. U. Noble, Brecksville, Ohio
Geo. Harding & Son, Waukesha, Wis.	First	10 00
Same	Second ..	5 00
Wilsons & Woodford, Muncie, Ind.
Same
W. U. Noble, Brecksville, Ohio
<i>Ewe Lamb.</i>			
D. B. & R. C. Watt, Xenia, Ohio
Same
W. U. Noble, Brecksville, Ohio
Same
Wilsons & Woodford, Muncie, Ind.	Second ..	3 00
Same
Geo. Harding & Son, Waukesha, Wis.	First	5 00
Same
<i>Expert Judge — Eli Dayton.</i>			

OXFORDDOWNS AND HAMPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
J. C. Williamson, Xenia, Ohio	First	\$10 00
Same
Geo. McKerrow, Sussex, Wis.
Same
Duvall & Taylor, Marlboro, Ohio
W. A. Shafor, Middletown, Ohio	Weston 26	.....	.....
Same	Shafors 587	.....	.....
J. Milton, Marshall, Mich.	Second ..	5 00
<i>Ram 1 year old and under 2.</i>			
J. C. Williamson, Xenia, Ohio	Second ..	5 00
Geo. McKerrow, Sussex, Wis.	First	10 00
Same

SHEEP — OXFORDDOWNS AND HAMPSHIRE DOWNS — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 1 year old and under 2 — Continued.</i>			
Duval & Taylor, Marlboro, Ohio	Shafors 639.	.....	.....
W. A. Shafor, Middletown, Ohio	Shafors 720.	.....	.....
Same	Shafors 665.	.....	.....
J. Milton, Marshall, Mich .....	.....	.....	.....
<i>Ram Lamb.</i>			
J. C. Williamson, Xenia, Ohio .....	.....	.....	.....
Same .....	.....	.....	.....
Geo. McKerrow, Sussex, Wis .....	.....	Second.	\$ 3 00
Same .....	.....	.....	.....
Duval & Taylor, Marlboro, Ohio	Shafors 924.	First.	5 00
W. A. Shafor, Middletown, Ohio	Shafors 725.	.....	.....
Same .....	.....	.....	.....
J. Milton, Marshall, Mich .....	.....	.....	.....
<i>Ewe over 2 years old.</i>			
J. C. Williamson, Xenia, Ohio .....	.....	.....	.....
Same .....	.....	.....	.....
Geo. McKerrow, Sussex, Wis .....	.....	.....	.....
Same .....	.....	.....	.....
Duval & Taylor, Marlboro, Ohio	Adams 367.	First.	10 00
W. A. Shafor, Middletown, Ohio	Shafors 562.	Second.	5 00
Same .....	.....	.....	.....
J. Milton, Marshall, Mich .....	.....	.....	.....
Same .....	.....	.....	.....
<i>Ewe under 2 years old.</i>			
J. C. Williamson, Xenia, Ohio .....	.....	.....	.....
Same .....	.....	.....	.....
Geo. McKerrow, Sussex, Wis .....	.....	First.	10 00
Same .....	.....	Second.	5 00
Duval & Taylor, Marlboro, Ohio .....	.....	.....	.....
Same .....	.....	.....	.....
W. A. Shafor, Middletown, Ohio	Shafors 603.	.....	.....
Same	Shafors 678.	.....	.....
J. Milton, Marshall, Mich .....	.....	.....	.....
<i>Ewe Lamb.</i>			
J. C. Williamson, Xenia, Ohio .....	.....	.....	.....
Same .....	.....	.....	.....
Geo. McKerrow, Sussex, Wis .....	.....	First.	5 00
Same .....	.....	.....	.....
Duval & Taylor, Marlboro, Ohio .....	.....	.....	.....
Same .....	.....	.....	.....
W. A. Shafor, Middletown, Ohio	Shafors 749.	Second.	3 00
Same	Shafors 755.	.....	.....
J. Milton, Marshall, Mich .....	.....	.....	.....

Expert Judge — S. H. Todd.

SHROPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
T. W. Davisson, Mechanicsburg, Ohio	George.	.....	.....
H. W. Chaffee, Brecksville, Ohio	Prod King.	First.	\$ 10 00
I. J. Williams & Sons, Muncie, Ind.	Columbus.	.....	.....
C. W. Reichenbach, Apple Creek, Ohio ..	.....	.....	.....
G. H. Davison, Millbrook, N. Y. ....	.....	Second.	5 00
Same .....	.....	.....	.....

SHEEP — SHROPSHIRE DOWNS — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 1 year old and under 2.</i>			
T. W. Davisson, Mechanicsburg, Ohio	Davissons		
H. W. Chaffee, Brecksville, Ohio	Merideth	First	\$ 10 00
C. W. O'Harra, Galloway, Ohio	Chaffee 11		
I. J. Williams & Sons, Muncie, Ind.	Williams 815		
Same			
G. H. Davison, Millbrook, N. Y.		Second	5 00
Same			
Same			
J. Milton, Marshall, Mich			
<i>Ram lamb.</i>			
T. W. Davisson, Mechanicsburg, Ohio			
H. W. Chaffee, Brecksville, Ohio	Smoky	Second	3 00
Same	McKinley		
C. W. O'Harra, Galloway, Ohio	Minnie		
I. J. Williams & Sons, Muncie, Ind.	Williams 905		
Same			
G. H. Davison, Millbrook, N. Y.		First	5 00
Same			
Same			
J. Milton, Marshall, Mich			
<i>Ewe over 2 years old.</i>			
T. W. Davisson, Mechanicsburg, Ohio			
Same			
H. W. Chaffee, Brecksville, Ohio	Towetype	Second	5 00
Same	Millie		
C. W. O'Harra, Galloway, Ohio	Amanda		
I. J. Williams & Sons, Muncie, Ind.		First	10 00
Same			
C. W. Reichenbach, Apple Creek, Ohio			
Same			
G. H. Davison, Millbrook, N. Y.			
Same			
<i>Ewe under 2 years old.</i>			
T. W. Davisson, Mechanicsburg, Ohio			
Same			
H. W. Chaffee, Brecksville, Ohio	Beauty		
I. J. Williams & Sons, Muncie, Ind.	Williams 825		
Same		Second	5 00
C. W. Reichenbach, Apple Creek, Ohio			
G. H. Davison, Millbrook, N. Y.		First	10 00
Same			
Same			
J. Milton, Marshall, Mich			
<i>Ewe lamb.</i>			
T. W. Davisson, Mechanicsburg, Ohio			
Same			
H. W. Chaffee, Brecksville, Ohio	Chaffee's 31	First	5 00
Same	Chaffee's 29		
C. W. O'Harra, Galloway, Ohio			
I. J. Williams & Sons, Muncie, Ind.	Williams 851		
Same			
G. H. Davison, Millbrook, N. Y.		Second	3 00
Same			
Same			
J. Milton, Marshall, Mich			

Expert Judge — S. H. Todd.

SHEEP — SOUTHDOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
D. B. & R. C. Watt, Xenia, Ohio.....	.....	.....	.....
Geo. McKerrow, Sussex, Wis.....	.....	.....	.....
Same.....	.....	.....	.....
W. U. Noble, Brecksville, Ohio.....	.....	Second.....	\$5 00
C. C. Shaw & Son, Newark, Ohio.....	Imp. Windsor.....	First.....	10 00
Robinson & Hagerty, Hanover, Ohio.....	G. J. H. 438.....	.....	.....
Virginia C. Meredith, Cambridge City, Ind.....	Captain Kidd.....	.....	.....
<i>Ram 1 year old and under 2.</i>			
D. B. & R. C. Watt, Xenia, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
Geo. McKerrow, Sussex, Wis.....	.....	.....	.....
Same.....	.....	.....	.....
W. U. Noble, Brecksville, Ohio.....	.....	.....	.....
C. C. Shaw & Son, Newark, Ohio.....	Shaw 75.....	.....	.....
Same.....	Shaw 59.....	.....	.....
Robinson & Hagerty, Hanover, Ohio.....	G. J. H. 511.....	.....	.....
Virginia C. Meredith, Cambridge City, Ind.....	Woodside.....	Second.....	5 00
D. W. Evans, Venedocia, Ohio.....	.....	First.....	10 00
<i>Ram lamb.</i>			
D. B. & R. C. Watt, Xenia, Ohio.....	.....	.....	.....
Geo. McKerrow, Sussex, Wis.....	.....	Second.....	3 00
Same.....	.....	.....	.....
W. U. Noble, Brecksville, Ohio.....	.....	First.....	5 00
Same.....	.....	.....	.....
C. C. Shaw & Son, Newark, Ohio.....	Shaw 100.....	.....	.....
Same.....	Shaw 102.....	.....	.....
Robinson & Hagerty, Hanover, Ohio.....	G. J. H. 535.....	.....	.....
Virginia C. Meredith, Cambridge City, Ind.....	.....	.....	.....
Same.....	.....	.....	.....
<i>Ewe over 2 years old.</i>			
D. B. & R. C. Watt, Xenia, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
Geo. McKerrow, Sussex, Wis.....	.....	First.....	10 00
Same.....	.....	.....	.....
W. U. Noble, Brecksville, Ohio.....	.....	Second.....	5 00
Same.....	.....	.....	.....
Robinson & Hagerty, Hanover, Ohio.....	G. J. H. 415.....	.....	.....
Virginia C. Meredith, Cambridge City, Ind.....	.....	.....	.....
Same.....	.....	.....	.....
D. W. Evans, Venedocia, Ohio.....	.....	.....	.....
<i>Ewe under 2 years old.</i>			
Geo. McKerrow, Sussex, Wis.....	.....	Second.....	5 00
Same.....	.....	.....	.....
W. U. Noble, Brecksville, Ohio.....	.....	First.....	10 00
Same.....	.....	.....	.....
C. C. Shaw & Son, Newark, Ohio.....	Shaw 63.....	.....	.....
Robinson & Hagerty, Hanover, Ohio.....	G. J. H. 2507.....	.....	.....
Virginia C. Meredith, Cambridge City, Ind.....	.....	.....	.....
Same.....	.....	.....	.....
<i>Ewe lamb.</i>			
D. B. & R. C. Watt, Xenia, Ohio.....	.....	Second.....	3 00
Same.....	.....	.....	.....
Geo. McKerrow, Sussex, Wis.....	.....	.....	.....
Same.....	.....	.....	.....
W. U. Noble, Brecksville, Ohio.....	.....	First.....	5 00
Same.....	.....	.....	.....
C. C. Shaw & Son, Newark, Ohio.....	Shaw 103.....	.....	.....
Same.....	Shaw 101.....	.....	.....
Robinson & Hagerty, Hanover, Ohio.....	G. J. H. 2550.....	.....	.....
Virginia C. Meredith, Cambridge City, Ind.....	.....	.....	.....
Same.....	.....	.....	.....

Expert Judge — S. H. Todd.

SHEEP — SWEEPSTAKES ON MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Flock to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2 and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.</i>			
O. E. Lincoln & Son, Milford Center, Ohio.....
R. D. Williamson, Xenia, Ohio.....
J. Lovett & Sons, Quincy, Ohio.....	First...	\$15 00
S. Blamer, Johnstown, Ohio.....
<i>Pen of four lambs, to consist of two rams and two ewes, all the get of one ram and owned and bred by the exhibitor.</i>			
O. E. Lincoln & Son, Milford Center, Ohio.....
Wilson Bros., Fredericktown, Ohio.....
R. D. Williamson, Xenia, Ohio.....	First...	15 00
<i>Ram of any age.</i>			
O. E. Lincoln & Son, Milford Center, Ohio.....
R. D. Williamson, Xenia, Ohio.....
J. M. Flanagan, West Jefferson, Ohio.....
U. Cook, West Mansfield, Ohio.....
J. Lovett & Sons, Quincy, Ohio.....	First...	10 00
S. Blamer, Johnstown, Ohio.....
H. G. McDowell, Canton, Ohio.....
<i>Ewe of any age.</i>			
O. E. Lincoln & Son, Milford Center, Ohio.....
R. D. Williamson, Xenia, Ohio.....
J. M. Flanagan, West Jefferson, Ohio.....
Same.....
U. Cook, West Mansfield, Ohio.....
Same.....
S. Blamer, Johnstown, Ohio.....	First...	10 00
H. G. McDowell, Canton, Ohio.....

Expert Judge — William Staley.

SWEEPSTAKES ON DELAINE MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Flock, to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2 and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.</i>			
A. T. Gamber, Wakeman, Ohio.....	First...	\$15 00
Wilson Bros., Fredericktown, Ohio.....
R. D. Williamson, Xenia, Ohio.....
J. W. Carpenter, Batesville, Ohio.....
J. M. Flanagan, West Jefferson, Ohio.....
W. F. Penry & Bro., Radnor, Ohio.....
H. G. McDowell, Canton, Ohio.....
<i>Pen of four lambs, to consist of two rams and two ewes, all the get of one ram, and owned and bred by the exhibitor.</i>			
A. T. Gamber, Wakeman, Ohio.....	First...	15 00
R. D. Williamson, Xenia, Ohio.....
J. W. Carpenter, Batesville, Ohio.....
<i>Ram of any age.</i>			
A. T. Gamber, Wakeman, Ohio.....

SHEEP — SWEEPSTAKES ON DELAINE MERINOS — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram of any age— Continued.</i>			
Wilson Bros., Fredericktown, Ohio
R. D. Williamson, Xenia, Ohio
J. W. Carpenter, Batesville, Ohio
J. M. Flanagan, West Jefferson, Ohio	First	\$10 00
W. P. Penry & Bro., Radnor, Ohio
H. G. McDowell, Canton, Ohio
<i>Ewe of any age.</i>			
A. T. Gamber, Wakeman, Ohio
Wilson Bros., Fredericktown, Ohio
R. D. Williamson, Xenia, Ohio
J. W. Carpenter, Batesville, Ohio
H. G. McDowell, Canton, Ohio
J. M. Flanagan, West Jefferson, Ohio	First	10 00
Same
U. Cook, West Mansfield, Ohio
W. P. Penry & Bro., Radnor, Ohio

Expert Judge—William Staley.

SWEEPSTAKES ON LONG WOOL SHEEP.

To include Leicesters, Lincolns and Cotswolds.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Flock, to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2, and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.</i>			
D. B. & R. C. Watt, Xenia, Ohio
Wilsons & Woodford, Muncie, Ind.	First	\$15 00
<i>Pen of four lambs, to consist of two rams and two ewes, all the get of one ram and owned and bred by the exhibitor.</i>			
D. B. & R. C. Watt, Xenia, Ohio
W. U. Noble, Brecksville, Ohio
Wilsons & Woodford, Muncie, Ind.	First	15 00
Geo. Harding & Son, Waukesha, Wis.
<i>Ram of any age.</i>			
D. B. & R. C. Watt, Xenia, Ohio
W. U. Noble, Brecksville, Ohio
Wilsons & Woodford, Muncie, Ind.
John Andregg, Basil, Ohio
Geo. Harding & Son, Waukesha, Wis.	First	10 00
<i>Ewe of any age.</i>			
D. B. & R. C. Watt, Xenia, Ohio
W. U. Noble, Brecksville, Ohio
Geo. Harding & Son, Waukesha, Wis.	First	10 00
Wilsons & Woodford, Muncie, Ind.
Same

Expert Judges—Eli Dayton, S. H. Todd.

SHEEP — SWEEPSTAKES ON SOUTHDOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Flock, to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under, 2 and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.</i>			
Geo. McKerrow, Sussex, Wis.	First ...	\$ 15 00
W. U. Noble, Brecksville, Ohio.
Robinson & Hagerty, Hanover, Ohio.
Virginia C. Meredith, Cambridge City, Ind.
<i>Pen of four lambs, to consist of two rams and two ewes, all the get of one ram and owned and bred by the exhibitor.</i>			
D. B. & R. C. Watt, Xenia, Ohio.
W. U. Noble, Brecksville, Ohio.
C. C. Shaw & Son, Newark, Ohio.	First ...	15 00
Robinson & Hagerty, Hanover, Ohio.
Virginia C. Meredith, Cambridge City, Ind.
<i>Ram of any age.</i>			
D. B. & R. C. Watt, Xenia, Ohio.
Geo. McKerrow, Sussex, Wis.
W. U. Noble, Brecksville, Ohio.	First ...	10 00
C. C. Shaw & Son, Newark, Ohio.
Robinson & Hagerty, Hanover, Ohio.
Virginia C. Meredith, Cambridge City, Ind.
D. W. Evans, Venedocia, Ohio.
<i>Ewe of any age.</i>			
D. B. & R. C. Watt, Xenia, Ohio.	First ...	10 00
Geo. McKerrow, Sussex, Wis.
W. U. Noble, Brecksville, Ohio.
Same.
Robinson & Hagerty, Hanover, Ohio.
Virginia C. Meredith, Cambridge City, Ind.

Expert Judge — Eli Dayton.

SWEEPSTAKES ON OXFORDDOWNS AND HAMPSHIREDOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Flock, to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2, and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.</i>			
J. C. Williamson, Xenia, Ohio.	First ...	\$ 15 00
W. A. Shafor, Middletown, Ohio.
Same.
J. Milton, Marshall, Mich.
<i>Pen of four lambs, to consist of two rams and two ewes, all the get of one ram and owned and bred by the exhibitor.</i>			
J. C. Williamson, Xenia, Ohio.	First ...	15 00
Duval & Taylor, Marlboro, Ohio.
W. A. Shafor, Middletown, Ohio.
Same.
J. Milton, Marshall, Mich.
<i>Ram of any age.</i>			
J. C. Williamson, Xenia, Ohio.

SHEEP — SWEEPSTAKES ON OXFORDDOWNS AND HAMPSHIRE DOWNS — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Ram of any age — Continued.</i>			
Geo. McKerrow, Sussex, Wis.....		First	\$10 00
Duvall & Taylor, Marlboro, Ohio.....			
W. A. Shafer, Middletown, Ohio.....			
Same.....			
J. Milton, Marshall, Mich.....			
<i>Ewe of any age.</i>			
J. C. Williamson, Xenia, Ohio.....		First	10 00
Geo. McKerrow, Sussex, Wis.....			
Duvall & Taylor, Marlboro, Ohio.....			
W. A. Shafer, Middletown, Ohio.....			
Same.....			
J. Milton, Marshall, Mich.....			

Expert Judge — Eli Dayton.

SWEEPSTAKES ON SHROPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Flock, to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2, and one ewe under 1 year. Ram to be owned and ewes to be owned and bred by the exhibitor.</i>			
T. W. Davisson, Mechanicsburg, Ohio.....		First	\$15 00
H. W. Chaffee, Brecksville, Ohio.....			
I. J. Williams & Sons, Muncie, Ind.....			
G. H. Davison, Millbrook, N. Y.....			
Same.....			
<i>Pen of four lambs, to consist of two rams and two ewes, all the get of one ram and owned and bred by the exhibitor.</i>			
T. W. Davisson, Mechanicsburg, Ohio.....		First	15 00
H. W. Chaffee, Brecksville, Ohio.....			
I. J. Williams & Sons, Muncie, Ind.....			
G. H. Davison, Millbrook, N. Y.....			
Same.....			
J. Milton, Marshall, Mich.....			
<i>Ram of any age.</i>			
T. W. Davisson, Mechanicsburg, Ohio.....		First	10 00
H. W. Chaffee, Brecksville, Ohio.....			
I. J. Williams & Sons, Muncie, Ind.....			
C. W. Reichenbach, Apple Creek, Ohio.....	Columbus.		
G. H. Davison, Millbrook, N. Y.....			
Same.....			
J. Milton, Marshall, Mich.....			
<i>Ewe of any age.</i>			
T. W. Davisson, Mechanicsburg, Ohio.....		First	10 00
H. W. Chaffee, Brecksville, Ohio.....			
Same.....			
I. J. Williams & Sons, Muncie, Ind.....			
G. H. Davison, Millbrook, N. Y.....			
Same.....			

Expert Judge — Eli Dayton.

SHEEP — FAT SHEEP.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Pen of two wethers, 2 years old.</i>			
T. D. Postle, Camp Chase, Ohio.....	Second ..	\$ 5 00
Robinson & Hagerty, Hanover, Ohio.....	First ..	8 00
Same
<i>Pen of two wethers, 1 year old and under 2.</i>			
T. D. Postle, Camp Chase, Ohio.....	First ..	8 00
<i>Pen of two wether lambs.</i>			
T. D. Postle, Camp Chase, Ohio.....	First ..	5 00
Same	Second ..	3 00

Expert Judge—Eli Dayton.

SPECIAL PRIZES OFFERED BY THE AMERICAN SHROPSHIRE REGISTRY
ASSOCIATION.

Sheep to be eligible to compete for premiums offered by this Association must be recorded and have a number in the Record, a certificate of which must be filed with each entry certificate made. Each registered sheep must bear an ear tag with number and initials corresponding to that given on the certificate, and all must be owned by the exhibitor at least ten days before going into the ring. The above will not apply to entries made for grade sheep.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>One ram, 1 year old or over, and four ewes of any age.</i>			
T. W. Davisson, Mechanicsburg, Ohio.....	Second ..	\$ 10 00
H. W. Chaffee, Brecksville, Ohio.....	First ..	15 00
G. H. Davison, Millbrook, N. Y.....
Same
I. J. Williams & Sons, Muncie, Ind.....
J. Milton, Marshall, Mich.....
<i>Flock of four lambs, one ram lamb and three ewe lambs, all to be American bred and owned by exhibitor.</i>			
T. W. Davisson, Mechanicsburg, Ohio.....	Second ..	10 00
H. W. Chaffee, Brecksville, Ohio.....
G. H. Davison, Millbrook, N. Y.....
Same
I. J. Williams & Sons, Muncie, Ind.....	First ..	15 00
J. Milton, Marshall, Mich.....

Expert Judge—S. H. Todd.

**SHEEP — SPECIAL PRIZES OFFERED BY THE AMERICAN OXFORDDOWN SHEEP
RECORD ASSOCIATION.**

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Pen of four lambs of either sex.</i>			
J. C. Williamson, Xenia, Ohio.....	Second ..	\$15 00
Same
Duvall & Taylor, Marlboro, Ohio
C. C. Shaw & Son, Newark, Ohio.....
W. A. Shafor, Middletown, Ohio.....	First ..	25 00
Same	Third ..	10 00
<i>Yearling ram.</i>			
J. C. Williamson, Xenia, Ohio.....	Second ..	10 00
Duvall & Taylor, Marlboro, Ohio.....	First ...	15 00
W. A. Shafor, Middletown, Ohio.....
Same
Same
<i>Pair yearling ewes.</i>			
J. C. Williamson, Xenia, Ohio.....	Second ..	10 00
Duvall & Taylor, Marlboro, Ohio.....	First ...	15 00
W. A. Shafor, Middletown, Ohio.....

Expert Judge—S. H. Todd.

SWINE — BERKSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar 2 years old and over.</i>			
O. P. Wolcott & Son, Conover, Ohio	Broadgage	First	\$10 00
A. W. Cooley, Coldwater, Mich	King Perfection		
L. C. Peterson, Spring Valley, Ohio	Lord Windsor	Second	5 00
Metcalf Bros., East Elma, N. Y.	Goliath		
Same			
<i>Boar 1 year old and under 2.</i>			
L. S. Ream, Oakwood, Ohio	Englewood Duke	Second	5 00
L. C. Peterson, Spring Valley, Ohio	Highclere Don	First	10 00
Metcalf Bros., East Elma, N. Y.	Bonfire		
Same			
<i>Boar 6 months and under 1 year.</i>			
L. S. Ream, Oakwood, Ohio	King C		
A. W. Cooley, Coldwater, Mich			
L. C. Peterson, Spring Valley, Ohio	Bella Dona Iwell	First	8 00
Metcalf Bros., East Elma, N. Y.	Swells Bro	Second	5 00
Same			
Same			
<i>Boar under 6 months old.</i>			
L. S. Ream, Oakwood, Ohio	Sensation		
A. W. Cooley, Coldwater, Mich	Cadet		
Same	Wonder	First	5 00
L. C. Peterson, Spring Valley, Ohio	Belles Poet	Second	5 00
Metcalf Bros., East Elma, N. Y.			
Same			
<i>Boar and three sows over 1 year old.</i>			
L. C. Peterson, Spring Valley, Ohio		Second	10 00
A. W. Cooley, Coldwater, Mich			
Metcalf Bros., East Elma, N. Y.		First	20 00
Same			
<i>Boar and three sows under 1 year old.</i>			
L. C. Peterson, Spring Valley, Ohio			
A. W. Cooley, Coldwater, Mich		Second	10 00
Metcalf Bros., East Elma, N. Y.		First	20 00
Same			
<i>Sow 2 years old and over.</i>			
A. W. Cooley, Coldwater, Mich	Satisfaction		
Same	Rose E		
L. C. Peterson, Spring Valley, Ohio		First	10 00
Same		Second	5 00
Metcalf Bros., East Elma, N. Y.	Highclere C		
Same	Counters Wantage		
<i>Sow 1 year old and under.</i>			
A. W. Cooley, Coldwater, Mich	Prides Beauty		
Same	Favorite		
L. C. Peterson, Spring Valley, Ohio		Second	5 00
Same			
Metcalf Bros., East Elma, N. Y.	Elpicks Matchless	First	10 00
Same	Broad Gate Belle		
Same	Fashion B		
Same	Fashion C		
Same	Handsome Lady		
<i>Sow 6 months and under 1 year.</i>			
L. S. Ream, Oakwood, Ohio	Superior		
A. W. Cooley, Coldwater, Mich	Duchess A		
Same	Duchess B		
Same			
L. C. Peterson, Spring Valley, Ohio		Second	5 00

SWINE — BERKSHIRES — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Sow 6 months and under 1 year— Continued.</i>			
Metcalf Bros., East Elma, N. Y.	Hytesbury	First	\$ 8 00
Same	Highclere XIX		
Same			
Same			
<i>Sow under 6 months old.</i>			
L. S. Ream, Oakwood, Ohio.	Tin Type		
A. W. Cooley, Coldwater, Mich.	Ideal		
Same	Leader		
Same			
L. C. Peterson, Spring Valley, Ohio		Second	3 00
Metcalf Bros., East Elma, N. Y.		First	5 00
Same			
<i>Four pigs under 6 months old, bred by the exhibitor.</i>			
A. W. Cooley, Coldwater, Mich.		Second	5 00
Metcalf Bros., East Elma, N. Y.		First	10 00
Same			

Expert Judges — John M. Jamison, S. H. Todd.

POLAND-CHINAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar 2 years old or over.</i>			
John W. Cook, New Paris, Ohio	Ben Wilkes	First	\$10 00
M. McConnell, Wakatomika, Ohio	Corbett	Second	5 00
J. M. Kiever, Bloomingsburg, Ohio	Straight Business		
H. Bradford, Rochester, Ohio	Independence		
A. N. Wiseley, Oakwood, Ohio	Senator		
Robinson & Lovett, Piqua, Ohio	Willow Pig		
<i>Boar 1 year old and under 2.</i>			
John W. Cook, New Paris, Ohio	Black Dan		
J. M. Kiever, Bloomingsburg, Ohio	Venture		
Same	Genuine Corwin		
F. M. Hays, Piketon, Ohio	Robert Jay		
A. N. Wiseley, Oakwood, Ohio	May Queen		
C. W. Haines, Centerville, Ohio		Second	5 00
H. J. Dils, Dayton, Ohio	Gay Monarch		
F. Wagner, Mansfield, Ohio	Concordia U. S.	First	10 00
Robinson & Lovett, Piqua, Ohio			
<i>Boar 6 months and under 1 year.</i>			
John W. Cook, New Paris, Ohio	Wallace		
J. M. Kiever, Bloomingsburg, Ohio		First	8 00
H. Bradford, Rochester, Ohio			
Crawford & Lackey, Xenia, Ohio	Beauty Gem		
A. N. Wiseley, Oakwood, Ohio			
E. E. Coler, Liberty, Ohio			
Same			
C. W. Haines, Centerville, Ohio			
Bruce Bros., Chesterville, Ohio		Second	5 00
Robinson & Lovett, Piqua, Ohio	Joe Patchen		
Same	Robert I.		
<i>Boar under 6 months old.</i>			
John W. Cook, New Paris, Ohio			

SWINE — POLAND-CHINA — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar under 6 months old — Continued.</i>			
J. M. Klever, Bloomingburg, Ohio			
Same			
H. Bradford, Rochester, Ohio			
A. N. Wiseley, Oakwood, Ohio			
E. E. Coler, Liberty, Ohio			
Same			
C. W. Haines, Centerville, Ohio		First	\$5 00
Same		Second	3 00
Bruce Bros., Chesterville, Ohio			
Same			
F. Wagner, Mansfield, Ohio			
Robinson & Lovett, Piqua, Ohio			
<i>Boar and three sows over 1 year old.</i>			
J. M. Klever, Bloomingburg, Ohio		First	20 00
F. M. Hays, Piketon, Ohio		Second	10 00
Robinson & Lovett, Piqua, Ohio			
<i>Boar and three sows under 1 year old.</i>			
John W. Cook, New Paris, Ohio			
J. M. Klever, Bloomingburg, Ohio		First	20 00
H. Bradford, Rochester, Ohio			
Crawford & Lackey, Xenia, Ohio			
E. E. Coler, Liberty, Ohio			
C. W. Haines, Centerville, Ohio		Second	10 00
Bruce Bros., Chesterville, Ohio			
<i>Sow 2 years old or over.</i>			
J. M. Klever, Bloomingburg, Ohio	Anxious	First	10 00
Robinson & Lovett, Piqua, Ohio	Queen Lill	Second	5 00
A. N. Wisely, Oakwood, Ohio			
<i>Sow 1 year old and under 2.</i>			
J. M. Klever, Bloomingburg, Ohio	Genuine 3d		
H. Bradford, Rochester, Ohio			
F. M. Hays, Piketon, Ohio	Ida	First	10 00
Bruce Bros., Chesterville, Ohio	Queen Wilkes		
Robinson & Lovett, Piqua, Ohio	Grace		
Same		Second	5 00
J. M. Klever, Bloomingburg, Ohio	May Queen		
A. N. Wiseley, Oakwood, Ohio			
<i>Sow 6 months old and under 1 year.</i>			
John W. Cook, New Paris, Ohio			
Same			
M. McConnell, Wakatomika, Ohio	Kate Corwin		
J. M. Klever, Bloomingburg, Ohio		First	8 00
H. Bradford, Rochester, Ohio		Second	5 00
Same			
Crawford & Lackey, Xenia, Ohio			
Same			
F. M. Hays, Piketon, Ohio	Eleanor		
E. E. Coler, Liberty, Ohio			
Same			
Bruce Bros., Chesterville, Ohio	Fanny B		
Robinson & Lovett, Piqua, Ohio			
A. N. Wiseley, Oakwood, Ohio	Beauty Tom		
<i>Sow under 6 months old.</i>			
John W. Cook, New Paris, Ohio			
Same			
J. M. Klever, Bloomingburg, Ohio		First	5 00
Same			
H. Bradford, Rochester, Ohio			
F. M. Hays, Piketon, Ohio	Maywoods U. S		
E. E. Coler, Liberty, Ohio			
C. W. Haines, Centerville, Ohio		Second	3 00
Same			
Bruce Bros., Chesterville, Ohio	Daisy		

SWINE — POLAND-CHINA — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Sow under 6 months old — Continued.</i>			
Bruce Bros., Chesterville, Ohio.....
Robinson & Lovett, Piqua, Ohio.....
Same.....
J. M. Klever, Bloomingburg, Ohio.....
A. N. Wiseley, Oakwood, Ohio.....
<i>Four pigs under 6 months old, bred by the exhibitor.</i>			
John W. Cook, New Paris, Ohio.....
M. McConnell, Wakatomika, Ohio.....
J. M. Klever, Bloomingburg, Ohio.....	Second	\$5 00
H. Bradford, Rochester, Ohio.....
E. E. Coler, Liberty, Ohio.....
C. W. Haines, Centerville, Ohio.....	First	10 00
Same.....
Bruce Bros., Chesterville, Ohio.....
F. M. Hays, Piketon, Ohio.....

Expert Judge—S. H. Todd.

CHESTER WHITES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar 2 years old or over.</i>			
O. S. Ritchie, Oakwood, Ohio.....	Little Cuba.....	First	\$ 10 00
F. A. Branch, Medina, Ohio.....	Champion.....	.....	.....
C. W. Baker, Delaware, Ohio.....	Perfection A.....	Second	5 00
J. L. Beringer, Marion, Ohio.....	Truly.....	.....	.....
<i>Boar 1 year old and under 2.</i>			
W. Whinery, Salem, Ohio.....	.....	First	10 00
O. S. Ritchie, Oakwood, Ohio.....	Switzer.....	.....	.....
F. A. Branch, Medina, Ohio.....	.....	Second	5 00
C. W. Baker, Delaware, Ohio.....	Senator V.....	.....	.....
<i>Boar 6 months and under 1 year.</i>			
W. Whinery, Salem, Ohio.....	.....	Second	5 00
Same.....	.....	.....	.....
O. S. Ritchie, Oakwood, Ohio.....	Rox.....	.....	.....
F. A. Branch, Medina, Ohio.....	Mike.....	First	8 00
J. L. Beringer, Marion, Ohio.....	.....	.....	.....
<i>Boar under 6 months old.</i>			
W. Whinery, Salem, Ohio.....	.....	Second	3 00
Same.....	.....	.....	.....
O. S. Ritchie, Oakwood, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
D. A. Lane, Commercial Point, Ohio.....	.....	.....	.....
F. A. Branch, Medina, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
C. W. Baker, Delaware, Ohio.....	Billy.....	First	5 00
J. L. Beringer, Marion, Ohio.....	.....	.....	.....
<i>Boar and three sows over 1 year old.</i>			
W. Whinery, Salem, Ohio.....	.....	Second	10 00
F. A. Branch, Medina, Ohio.....	.....	First	20 00
<i>Boar and three sows under 1 year old.</i>			
W. Whinery, Salem, Ohio.....	.....	.....	.....

SWINE — CHESTER WHITES — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar and three sows under 1 year old — Continued.</i>			
W. Whinery, Salem, Ohio.....	.....	Second ..	\$10 00
F. A. Branch, Medina, Ohio.....	.....	First ..	20 00
C. W. Baker, Delaware, Ohio.....	.....	
<i>Sow 2 years old or over.</i>			
O. S. Ritchie, Oakwood, Ohio.....	Lady Martin.....	Second ..	5 00
F. A. Branch, Medina, Ohio.....	Lilac 2d.....	First ..	10 00
Same.....	Lady Chase.....		
J. L. Beringer, Marion, Ohio.....	Maud 2d.....		
<i>Sow 1 year old and under 2.</i>			
W. Whinery, Salem, Ohio.....	.....	
Same.....	.....	
O. S. Ritchie, Oakwood, Ohio.....	Blossom 2d.....	First ..	10 00
F. A. Branch, Medina, Ohio.....	Lady Shipper.....		
J. L. Beringer, Marion, Ohio.....	Lady Branch.....	Second ..	5 00
<i>Sow 6 months and under 1 year.</i>			
W. Whinery, Salem, Ohio.....	.....	Second ..	5 00
Same.....	.....	
O. S. Ritchie, Oakwood, Ohio.....	Lady Martin 2d.....		
F. A. Branch, Medina, Ohio.....	Silver Maid.....	First ..	8 00
J. L. Beringer, Marion, Ohio.....	.....	
<i>Sow under 6 months old.</i>			
W. Whinery, Salem, Ohio.....	.....	First ..	5 00
Same.....	.....	
O. S. Ritchie, Oakwood, Ohio.....	.....	
Same.....	.....	
F. A. Branch, Medina, Ohio.....	.....	
Same.....	.....	
C. W. Baker, Delaware, Ohio.....	.....	Second ..	3 00
J. L. Beringer, Marion, Ohio.....	.....	
D. A. Lane, Commercial Point, Ohio.....	.....	
<i>Four pigs under 6 months old, bred by the exhibitor.</i>			
W. Whinery, Salem, Ohio.....	.....	Second ..	5 00
Same.....	.....	
O. S. Ritchie, Oakwood, Ohio.....	.....	
F. A. Branch, Medina, Ohio.....	.....	
C. W. Baker, Delaware, Ohio.....	.....	First ..	10 00

Expert Judge — S. H. Todd.

SUFFOLK, YORKSHIRE, CHESHIRE AND VICTORIA BREEDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar 1 year old or over.</i>			
George A. Ineichen, Celina, Ohio.....	Giant ..	First ..	\$10 00
Charles McClave, New London, Ohio.....	.....	Second ..	5 00
<i>Boar under 1 year old.</i>			
George A. Ineichen, Celina, Ohio.....	.....	First ..	10 00
Charles McClave, New London, Ohio.....	.....	Second ..	5 00
<i>Sow 1 year old or over.</i>			
George A. Ineichen, Celina, Ohio.....	Mattie Davis.....	First ..	10 00

SWINE — SUFFOLK, YORKSHIRE, CHESHIRE AND VICTORIA BREEDS — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Sow 1 year old or over — Continued.</i>			
George A. Ineichen, Celina, Ohio.....	Heavy Weight.....	Second..	\$ 5 00
Charles McClave, New London, Ohio.....
<i>Sow under 1 year old.</i>			
George A. Ineichen, Celina, Ohio.....	First ..	10 00
Same	Second..	5 00
Charles McClave, New London, Ohio.....

Expert Judge — S. H. Todd.

ESSEX.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar 1 year old or over.</i>			
George A. Ineichen, Celina, Ohio.....	Ohio Jim.....	First ..	\$ 10 00
<i>Boar under 1 year old.</i>			
George A. Ineichen, Celina, Ohio.....	.....	First ..	10 00
<i>Sow 1 year old or over.</i>			
George A. Ineichen, Celina, Ohio.....	.....	First ..	10 00
<i>Sow under 1 year old.</i>			
George A. Ineichen, Celina, Ohio.....	.....	First ..	10 00

Expert Judge — S. H. Todd.

DUROC JERSEY.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar 2 years old and over.</i>			
C. Borradaile, Camden, Ohio.....	Model.....	Second..	\$ 5 00
O. Walter & Bro., Lebanon, Ohio.....	Duke of Star Herd.....	.....	.....
Same	Claimont.....	First ..	10 00
<i>Boar 1 year old and under 2.</i>			
C. Borradaile, Camden, Ohio.....	Chieftain	Second..	5 00
Same	Royal Tom.....	First ..	10 00
<i>Boar 6 months and under 1 year.</i>			
C. Borradaile, Camden, Ohio.....	Come and See.....	First ..	8 00
Same	Commander.....	.....	.....
O. Walter & Bro., Lebanon, Ohio.....	Pilot	Second..	5 00
<i>Boar under 6 months old.</i>			
C. Borradaile, Camden, Ohio.....	York	First ..	5 00
O. Walter & Bro., Lebanon, Ohio.....	Pig.....	Second..	3 00
Same .....	.....	.....	.....

SWINE — DUROC JERSEY — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Boar and three sows over 1 year old.</i>			
C. Borradaile, Camden, Ohio.....	.....	First...	\$20 00
O. Walter & Bro., Lebanon, Ohio.....	.....	Second..	10 00
<i>Boar and three sows under 1 year old.</i>			
C. Borradaile, Camden, Ohio.....	.....	First...	20 00
O. Walter & Bro., Lebanon, Ohio.....	.....	Second..	10 00
<i>Sow 2 years old and over.</i>			
C. Borradaile, Camden, Ohio.....	Blanche V.....	.....	.....
Same.....	Perfection.....	First...	10 00
O. Walter & Bro., Lebanon, Ohio.....	Lady Hubert.....	.....	.....
Same.....	Elsie Vennett.....	Second..	5 00
<i>Sow 1 year old and under 2.</i>			
C. Borradaile, Camden, Ohio.....	Olie.....	.....	.....
Same.....	Ohio Beauty.....	First...	10 00
O. Walter & Bro., Lebanon, Ohio.....	Lady Blanche.....	Second..	5 00
Same.....	Julia Duchess.....	.....	.....
<i>Sow 6 months old and under 1 year.</i>			
C. Borradaile, Camden, Ohio.....	Belle of Ohio.....	.....	.....
Same.....	Fashion.....	.....	.....
Same.....	Lady Better.....	Second..	5 00
Same.....	Lady Cedar.....	.....	.....
O. Walter & Bro., Lebanon, Ohio.....	Walter's Blanche.....	.....	.....
Same.....	Lucy Duchess.....	First...	8 00
<i>Sow under 6 months.</i>			
C. Borradaile, Camden, Ohio.....	Tip.....	First...	5 00
O. Walter & Bro., Lebanon, Ohio.....	Pig.....	Second..	3 00
Same.....	Pig.....	.....	.....
<i>Four pigs under 6 months old, bred by the exhibitor.</i>			
O. Walter & Bro., Lebanon, Ohio.....	.....	First...	10 00

Expert Judge — S. H. Todd.

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Berkshire boar of any age.</i>			
O. P. Wolcott & Son, Conover, Ohio.....	Broadgag.....	First...	\$10 00
A. W. Cooley, Coldwater, Mich.....	King Perfection.....	.....	.....
Same.....	King C.....	.....	.....
L. C. Peterson, Spring Valley, Ohio.....	.....	.....	.....
Metcalf Bros., East Elma, N. Y.....	.....	.....	.....
Same.....	.....	.....	.....
<i>Berkshire sow of any age.</i>			
L. S. Ream, Oakwood, Ohio.....	.....	.....	.....
A. W. Cooley, Coldwater, Mich.....	.....	.....	.....
Same.....	.....	.....	.....
Same.....	.....	.....	.....
L. C. Peterson, Spring Valley, Ohio.....	.....	First...	10 00
Metcalf Bros., East Elma, N. Y.....	.....	.....	.....

SWINE — SWEEPSTAKES — Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
<i>Poland-China boar of any age.</i>			
John W. Cook, New Paris, Ohio.....	Black Dan.....	First...	\$ 10 00
Same.....	Ben Wilkes.....	.....	.....
J. M. Klever, Bloomingburg, Ohio.....	Straight Business.....	.....	.....
A. N. Wisely, Oakwood, Ohio.....	.....	.....	.....
C. W. Haines, Centerville, Ohio.....	.....	.....	.....
Bruce Bros., Chesterville, Ohio.....	.....	.....	.....
Robinson & Lovett, Piqua, Ohio.....	.....	.....	.....
<i>Poland-China sow of any age.</i>			
John W. Cook, New Paris, Ohio.....	Cleopatra.....	.....	.....
J. M. Klever, Bloomingburg, Ohio.....	Anxious.....	.....	.....
H. Bradford, Rochester, Ohio.....	.....	First...	10 00
F. M. Hays, Piketon, Ohio.....	.....	.....	.....
Bruce Bros., Chesterville, Ohio.....	Queen Wilkes.....	.....	.....
Robinson & Lovett, Piqua, Ohio.....	.....	.....	.....
Crawford & Lackey, Xenia, Ohio.....	.....	.....	.....
<i>Chester White boar of any age.</i>			
W. Whinery, Salem, Ohio.....	.....	.....	.....
O. S. Ritchie, Oakwood, Ohio.....	.....	First...	10 00
F. A. Branch, Medina, Ohio.....	.....	.....	.....
Same.....	.....	.....	.....
C. W. Baker, Delaware, Ohio.....	.....	.....	.....
<i>Chester White sow of any age.</i>			
W. Whinery, Salem, Ohio.....	.....	.....	.....
O. S. Ritchie, Oakwood, Ohio.....	.....	.....	.....
F. A. Branch, Medina, Ohio.....	.....	First...	10 00
Same.....	.....	.....	.....
<i>Duroc Jersey boar of any age.</i>			
C. Borradaile, Camden, Ohio.....	.....	.....	.....
O. Walter & Bro., Lebanon, Ohio.....	Duke of Star Herd.....	First...	10 00
<i>Duroc Jersey sow of any age.</i>			
C. Borradaile, Camden, Ohio.....	.....	First...	10 00
O. Walter & Bro., Lebanon, Ohio.....	Lady Blanche.....	.....	.....
Same.....	Lucy Duchess.....	.....	.....

Expert Judges—S. H. Todd, John M. Jamison, W. C. Hankinson.

AWARDS.

POULTRY—BARRED PLYMOUTH ROCK.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Geo. M. Leffel, Springfield, Ohio.....	Best cock.....	\$1 25
F. W. Richardson, Knoxdale, Ohio.....	2d ".....	75
Geo. M. Leffel, Springfield, Ohio.....	Best cockerel.....	1 25
Joseph H. Smith, Xenia, Ohio.....	2d ".....	75
F. W. Richardson, Knoxdale, Ohio.....	Best hen.....	1 25
Same.....	2d ".....	75
Charles McClave, New London, Ohio.....	Best pullet.....	1 25
Geo. M. Leffel, Springfield, Ohio.....	2d ".....	75
F. W. Richardson, Knoxdale, Ohio.....	Best breeding pen.....	2 00
Geo. M. Leffel, Springfield, Ohio.....	2d ".....	1 00

WHITE PLYMOUTH ROCK.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles McClave, New London, Ohio.....	Best cock.....	\$1 25
Charles Gammerdinger, Columbus, Ohio....	2d ".....	75
Mt. M. Bargar, Mt. Gilead, Ohio.....	Best cockerel.....	1 25
Charles McClave, New London, Ohio.....	Best hen.....	1 25
Mt. M. Bargar, Mt. Gilead, Ohio.....	2d ".....	75
Charles McClave, New London, Ohio.....	Best pullet.....	1 25
Mt. M. Bargar, Mt. Gilead, Ohio.....	2d ".....	75
Same.....	Best breeding pen.....	2 00

WHITE WYANDOTTE.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles Gammerdinger, Columbus, Ohio....	Best cock.....	\$1 25
G. R. Baxter, Hillsdale, Mich.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio....	Best cockerel.....	1 25
C. W. Kent & Co., Newark, Ohio.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio....	Best hen.....	1 25
G. R. Baxter, Hillsdale, Mich.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio....	Best pullet.....	1 25
C. W. Kent & Co., Newark, Ohio.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio....	Best breeding pen.....	2 00

POULTRY—SILVER WYANDOTTE.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles McClave, New London, Ohio.....	Best cock.....	\$1 25
E. C. Fritch, Prospect, Ohio.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio.....	Best cockerel.....	1 25
Charles McClave, New London, Ohio.....	2d ".....	75
Same.....	Best hen.....	1 25
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	75
Charles McClave, New London, Ohio.....	Best pullet.....	1 25
E. C. Fritch, Prospect, Ohio.....	2d ".....	75
Same.....	Best breeding pen.....	2 00
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	1 00

GOLDEN WYANDOTTE.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Ira C. Keller, Prospect, Ohio.....	Best cock.....	\$1 25
Same.....	2d ".....	75
S. B. McFarland, Sunbury, Ohio.....	Best cockerel.....	1 25
E. C. Fritch, Prospect, Ohio.....	2d ".....	75
Ira C. Keller, Prospect, Ohio.....	Best hen.....	1 25
Same.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio.....	Best pullet.....	1 25
Same.....	2d ".....	75
Ira C. Keller, Prospect, Ohio.....	Best breeding pen.....	2 00
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	1 00

BLACK WYANDOTTE.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
E. C. Fritch, Prospect, Ohio.....	Best cock.....	\$1 25
Same.....	Best cockerel.....	1 25
Same.....	2d ".....	75
Same.....	Best hen.....	1 25
Same.....	2d ".....	75
Same.....	Best pullet.....	1 25
Same.....	2d ".....	75

BLACK JAVA.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mell Parrott, Mt. Gilead, Ohio.....	Best cock.....	\$1 25
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	75
Mell Parrott, Mt. Gilead, Ohio.....	Best cockerel.....	1 25
Same.....	2d ".....	75
Same.....	Best hen.....	1 25
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	75

POULTRY — BLACK JAVA — Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mell Parrott, Mt. Gilead, Ohio.....	Best pullet.....	\$1 25
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	75
Mell Parrott, Mt. Gilead, Ohio.....	Best breeding pen.....	2 00
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	1 00

WHITE JAVA.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.....	Best cock.....	\$1 25
Mell Parrott, Mt. Gilead, Ohio.....	2d ".....	75
G. R. Baxter Hillsdale, Mich.....	Best cockerel.....	1 25
Mell Parrott, Mt. Gilead, Ohio.....	2d ".....	75
Same.....	Best hen.....	1 25
Charles McClave, New London, Ohio.....	2d ".....	75
G. R. Baxter, Hillsdale, Mich.....	Best pullet.....	1 25
Mell Parrott, Mt. Gilead, Ohio.....	2d ".....	75

LIGHT BRAHMA.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles McClave, New London, Ohio.....	Best cock.....	\$1 25
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	75
Same.....	Best cockerel.....	1 25
Charles McClave, New London, Ohio.....	Best hen.....	1 25
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	75
Same.....	Best pullet.....	1 25
Same.....	2d ".....	75
Same.....	Best breeding pen.....	2 00

DARK BRAHMA.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles Gammerdinger, Columbus, Ohio.....	Best cock.....	\$1 25
Mell Parrott, Mt. Gilead, Ohio.....	2d ".....	75
John H. Shower, Basil, Ohio.....	Best cockerel.....	1 25
Same.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio.....	Best hen.....	1 25
Charles McClave, New London, Ohio.....	2d ".....	75
John H. Shower, Basil, Ohio.....	Best pullet.....	1 25
Same.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio.....	Best breeding pen.....	2 00
John H. Shower, Basil, Ohio.....	2d ".....	1 00

POULTRY — BUFF COCHIN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.....	Best cock	\$1 25
W. Shallenberger, Amanda, Ohio.....	2d "	75
Chas. Gammerdinger, Columbus, Ohio.....	Best cockerel	1 25
J. H. Cole, Berkshire, Ohio	2d "	75
Chas. Gammerdinger, Columbus, Ohio.....	Best hen	1 25
John H. Shower, Basil, Ohio.....	2d "	75
J. H. Cole, Berkshire, Ohio.....	Best pullet.....	1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d "	75
Same	Best breeding pen.....	2 00
W. Shallenberger, Amanda, Ohio.....	2d "	1 00

PARTRIDGE COCHIN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. McClave, New London, Ohio.....	Best cock	\$1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Chas. McClave, New London, Ohio	Best hen	1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d "	75
Same	Best pullet.....	1 25
H. C. F. man, Ashley, Ohio.....	2d "	75
Chas. Gammerdinger, Columbus, Ohio.....	Best breeding pen.....	2 00

WHITE COCHIN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mell Parrott, Mt. Gillead, Ohio.....	Best cock	\$1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d "	75
Same	Best cockerel	1 25
Mell Parrott, Mt. Gillead, Ohio.....	2d "	75
Chas. Gammerdinger, Columbus, Ohio.....	Best hen	1 25
Mell Parrott, Mt. Gillead, Ohio.....	2d "	75
M. M. Bargar, Mt. Gillead, Ohio.....	Best pullet.....	1 25
Mell Parrott, Mt. Gillead, Ohio.....	2d "	75

BLACK COCHIN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.....	Best cock	\$1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d "	75
Mell Parrott, Mt. Gillead, Ohio.....	Best cockerel	1 25
G. R. Baxter, Hillsdale, Mich.....	2d "	75
Mell Parrott, Mt. Gillead, Ohio.....	Best pullet	1 25
G. R. Baxter, Hillsdale, Mich.....	2d "	75

PREMIUM AWARDS.

POULTRY—BLACK LANGSHAN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.	Best cock	\$1 25
Chas. McClave, New London, Ohio.	2d "	75
Chas. Gammerdinger, Columbus, Ohio.	Best cockerel	1 25
Joseph Cole, Ashley, Ohio.	2d "	75
Chas. McClave, New London, Ohio.	Best hen	1 25
John H. Shower, Basil, Ohio.	2d "	75
Mell Parrott, Mt. Gilead, Ohio.	Best pullet	1 25
Chas. Gammerdinger, Columbus, Ohio.	2d "	75
John H. Shower, Basil, Ohio.	Best breeding pen	2 00

S. C. BROWN LEGHORN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mell Parrott, Mt. Gilead, Ohio.	Best cock	\$1 25
Chas. Gammerdinger, Columbus, Ohio.	2d "	75
Same	Best cockerel	1 25
Chas. McClave, New London, Ohio.	2d "	75
M. M. Bargar, Mt. Gilead, Ohio.	Best hen	1 25
Mell Parrott, Mt. Gilead, Ohio.	2d "	75
Chas. Gammerdinger, Columbus, Ohio.	Best pullet	1 25
Same	2d "	75
M. M. Bargar, Mt. Gilead, Ohio.	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, Ohio.	2d "	1 00

R. C. BROWN LEGHORN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.	Best cock	\$1 25
Same	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
G. R. Baxter, Hillsdale, Mich.	2d "	75
Chas. Gammerdinger, Columbus, Ohio.	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00

S. C. WHITE LEGHORN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.	Best cock	\$1 25
Mell Parrott, Mt. Gilead, Ohio.	2d "	75
Same	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75

POULTRY—S. C. WHITE LEGHORN—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mell Parrott, Mt. Gilead, Ohio.....	Best pullet	\$1 25
Same	2d "	75
Same	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, Ohio.....	2d "	1 00

R. C. WHITE LEGHORN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.....	Best cock	\$1 25
Chas. McClave, New London, Ohio.....	2d "	75
Mell Parrott, Mt. Gilead, Ohio.....	Best cockerel	1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d "	75
G. R. Baxter, Hillsdale, Mich.....	Best hen	1 25
Same	2d "	75
Mell Parrott, Mt. Gilead, Ohio	Best pullet.....	1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d "	75

BLACK LEGHORN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.....	2d best cock.....	\$0 75
Same	Best cockerel	1 25
G. R. Baxter, Hillsdale, Mich.....	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet.....	1 25
W. Shallenberger, Amanda, Ohio	2d "	75

BUFF LEGHORN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio	Best cock	\$1 25
Same	Best hen	1 25

BLACK MINORCA.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mell Parrott, Mt. Gilead, Ohio	Best cock	\$1 25
Same	2d "	75

POULTRY—BLACK MINORCA—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
C. W. Kent & Co., Newark, Ohio.....	Best cockerel	\$1 25
M. M. Barger, Mt. Gilead, Ohio.....	2d "	75
Mell Parrott, Mt. Gilead, Ohio.....	Best hen	1 25
Same	2d "	75
C. W. Kent & Co., Newark, Ohio.....	Best pullet.....	1 25
M. M. Barger, Mt. Gilead, Ohio.....	2d "	75
Mell Parrott, Mt. Gilead, Ohio.....	Best breeding pen.....	2 00
Chas. Gammerdinger, Columbus, Ohio.....	2d "	1 00

BLACK SPANISH.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
M. A. Weiant, Worthington, Ohio.....	Best cock	\$1 25
Mell Parrott, Mt. Gilead, Ohio.....	2d "	75
M. A. Weiant, Worthington, Ohio.....	Best cockerel	1 25
Same	2d "	75
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet.....	1 25
Same	2d "	75
Same	Best breeding pen.....	2 00
Same	2d "	1 00

W. C. BLACK POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mrs. E. Gammerdinger, Columbus, Ohio....	Best cock	\$1 25
Mell Parrott, Mt. Gilead, Ohio.....	2d "	75
Mrs. E. Gammerdinger, Columbus, Ohio....	Best cockerel	1 25
Chas. McClave, New London, Ohio.....	2d "	75
Mrs. E. Gammerdinger, Columbus, Ohio....	Best hen	1 25
Mell Parrott, Mt. Gilead, Ohio.....	2d "	75
Same	Best pullet.....	1 25
Chas. McClave, New London, Ohio.....	2d "	75
Mrs. E. Gammerdinger, Columbus, Ohio....	Best breeding pen.....	2 00
Mell Parrott, Mt. Gilead, Ohio.....	2d "	1 00

PLAIN SILVER POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mrs. E. Gammerdinger, Columbus, Ohio....	Best cock	\$1 25
Same	2d "	75
Same	Best cockerel	1 25
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet.....	1 25
Same	2d "	75
Same	Best breeding pen	2 00

POULTRY — PLAIN WHITE POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. McClave, New London, Ohio	Best cock	\$1 25
Mell Parrott, Mt. Gilead, Ohio	2d "	75
Mrs. E. Gammerdinger, Columbus, Ohio	Best cockerel	1 25
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	Best breeding pen	2 00

PLAIN GOLDEN POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mrs. E. Gammerdinger, Columbus, Ohio	Best cock	\$1 25
Same	2d "	75
Same	Best cockerel	1 25
Mell Parrott, Mt. Gilead, Ohio	2d "	75
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Mrs. E. Gammerdinger, Columbus, Ohio	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00

BEARDED GOLDEN POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
M. M. Myers, New Dover, Ohio	Best cock	\$1 25
Mrs. E. Gammerdinger, Columbus, Ohio	2d "	75
M. M. Bargar, Mt. Gilead, Ohio	Best cockerel	1 25
Mrs. E. Gammerdinger, Columbus, Ohio	2d "	75
Same	Best hen	1 25
Same	2d "	75
Mell Parrott, Mt. Gilead, Ohio	Best pullet	1 25
M. M. Bargar, Mt. Gilead, Ohio	2d "	75
Mrs. E. Gammerdinger, Columbus, Ohio	Best breeding pen	2 00

BEARDED SILVER POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mrs. E. Gammerdinger, Columbus, Ohio ..	Best cock	\$1 25
Chas. McClave, New London, Ohio	2d "	75
Same	Best cockerel	1 25
Mrs. E. Gammerdinger, Columbus, Ohio	2d "	75
Same	Best hen	1 25
Chas. McClave, New London, Ohio	2d "	75
Same	Best pullet	1 25
Mrs. E. Gammerdinger, Columbus, Ohio	2d "	75
Same	Best breeding pen	2 00

PREMIUM AWARDS.

POULTRY — BEARDED WHITE POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mrs. E. Gammerdinger, Columbus, Ohio	Best cock	\$ 1 25
Same	Best cockerel	1 25
Same	Best hen	1 25
Same	2d "	75
Same	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00

GOLDEN SPANGLED HAMBURG.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.	Best cock	\$ 1 25
M. M. Meyers, New Dover, Ohio	2d "	75
C. Gammerdinger, Columbus, Ohio	Best cockerel	1 25
G. R. Baxter, Hillsdale, Mich.	Best hen	1 25
M. M. Meyers, New Dover, Ohio	2d "	75
C. Gammerdinger, Columbus, Ohio	Best pullet	1 25

SILVER SPANGLED HAMBURG.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles Gammerdinger, Columbus, Ohio	Best cock	\$ 1 25
Same	2d "	75
Charles McClave, New London, Ohio	Best cockerel	1 25
G. R. Baxter, Hillsdale, Mich.	2d "	75
Charles Gammerdinger, Columbus, Ohio	Best hen	1 25
Same	2d "	75
S. B. McFarland, Sunbury, Ohio	Best pullet	1 25
Charles Gammerdinger, Columbus, Ohio	2d "	75
Same	Best breeding pen	2 00
G. R. Baxter, Hillsdale, Mich.	2d "	1 00

GOLDEN PENCILED HAMBURG.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles McClave, New London, Ohio	Best cock	\$ 1 25
Charles Gammerdinger, Columbus, Ohio	2d "	75
Mell Parrott, Mt. Gilead, Ohio	Best cockerel	1 25
M. M. Bargar, Mt. Gilead, Ohio	2d "	75
Same	Best hen	1 25
Mell Parrott, Mt. Gilead, Ohio	2d "	75
Same	Best pullet	1 25
M. M. Bargar, Mt. Gilead, Ohio	2d "	75

POULTRY—SILVER PENCILED HAMBURG.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.	Best cock.	\$1 25.
Charles McClave, New London, Ohio.	2d "	75
Same	Best cockerel.	1 25
M. M. Bargar, Mt. Gilead, Ohio.	2d "	75
G. R. Baxter, Hillsdale, Mich.	Best hen.	1 25
Same	2d "	75
Same	Best pullet.	1 25
Charles McClave, New London, Ohio.	2d "	75

BLACK HAMBURG.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.	Best cock.	\$1 25.
Charles Gammerdinger, Columbus, Ohio.	2d "	75
G. R. Baxter, Hillsdale, Mich.	Best cockerel.	1 25
Mell Parrott, Mt. Gilead, Ohio.	2d "	75
M. M. Meyers, New Dover, Ohio.	Best hen.	1 25
G. R. Baxter, Hillsdale, Mich.	2d "	75
W. Shallenberger, Amanda, Ohio.	Best pullet.	1 25
G. R. Baxter, Hillsdale, Mich.	2d "	75

WHITE HAMBURG.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.	Best cock.	\$1 25.
Mell Parrot, Mt. Gilead, Ohio.	2d "	75
G. R. Baxter, Hillsdale, Mich.	Best cockerel.	1 25
Charles Gammerdinger, Columbus, Ohio.	2d "	75
Mell Parrott, Mt. Gilead, Ohio.	Best hen.	1 25
G. R. Baxter, Hillsdale, Mich.	2d "	75
Same	Best pullet.	1 25
Same	2d "	75

RED CAP.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles McClave, New London, Ohio.	Best cock.	\$1 25.
C. W. Kent & Co., Newark, Ohio.	2d "	75
Charles McClave, New London, Ohio.	Best cockerel.	1 25.
Mell Parrott, Mt. Gilead, Ohio.	2d "	75
M. M. Meyers, New Dover, Ohio.	Best hen.	1 25
C. W. Kent & Co., Newark, Ohio.	2d "	75
Charles McClave, New London, Ohio.	Best pullet.	1 25
Mell Parrott, Mt. Gilead, Ohio.	2d "	75

PREMIUM AWARDS.

POULTRY — HOUDAN.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles Gammerdinger, Columbus, Ohio ...	Best cock.....	\$ 1 25
Same	Best cockerel.....	1 25
Same	2d ".....	75
G. R. Baxter, Hillsdale, Mich.	Best hen.....	1 25
Charles Gammerdinger, Columbus, Ohio....	2d ".....	75
Same	Best pullet.....	1 25
Same	2d ".....	75
Same	Best breeding pen.....	2 00

CREVECOEUR.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles Gammerdinger, Columbus, Ohio....	Best cock.....	\$ 1 25
Same	2d ".....	75
Same	Best cockerel.....	1 25
Same	2d ".....	75
Same	Best hen.....	1 25
Same	2d ".....	75
Same	Best pullet.....	1 25
Same	2d ".....	75
Same	Best breeding pen.....	2 00
Same	2d ".....	1 00

LA FLECHE.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Charles Gammerdinger, Columbus, Ohio....	Best cock.....	\$ 1 25
Same	Best cockerel.....	1 25
Same	2d ".....	75
Same	Best hen.....	1 25
Same	2d ".....	75
Same	Best pullet.....	1 25
Same	2d ".....	75

SILVER GREY DORKING.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.	Best cock.....	\$ 1 25
W. Shallenberger, Amanda, Ohio.....	2d ".....	75
Charles Gammerdinger, Columbus, Ohio....	Best cockerel.....	1 25
Same	Best hen.....	1 25
G. R. Baxter, Hillsdale, Mich.	2d ".....	75
Charles Gammerdinger, Columbus, Ohio....	Best pullet.....	1 25

POULTRY—COLORED DORKING.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.....	Best cock.....	\$1 25
Charles Gammerdinger, Columbus, Ohio.....	2d ".....	75
Same.....	Best cockerel.....	1 25
Chas. Gammerdinger, Columbus, Ohio.....	Best hen.....	1 25
G. R. Baxter, Hillsdale, Mich.....	2d ".....	75
Chas. Gammerdinger, Columbus, Ohio.....	Best pullet.....	1 25
W. Shallenberger, Amanda, Ohio.....	2d ".....	75

WHITE DORKING.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.....	Best cock.....	\$1 25
G. R. Baxter, Hillsdale, Mich.....	Best cockerel.....	1 25
Same.....	2d ".....	75
Chas. Gammerdinger, Columbus, Ohio.....	Best hen.....	1 25
Same.....	2d ".....	75
G. R. Baxter, Hillsdale, Mich.....	Best pullet.....	1 25
Same.....	2d ".....	75

BLACK BREASTED RED GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
M. M. Meyers, New Dover, Ohio.....	Best cock.....	\$1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d ".....	75
M. M. Meyers, New Dover, Ohio.....	Best cockerel.....	1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d ".....	75
Same.....	Best hen.....	1 25
G. R. Baxter, Hillsdale, Mich.....	2d ".....	75
Chas. Gammerdinger, Columbus, Ohio.....	Best pullet.....	1 25
Same.....	2d ".....	75
Same.....	Best breeding pen.....	2 00

SUMATRA GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
M. M. Meyers, New Dover, Ohio.....	Best cock.....	\$1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d ".....	75
Same.....	Best cockerel.....	1 25
Same.....	2d ".....	75
Same.....	Best hen.....	1 25
Same.....	2d ".....	75
Same.....	Best pullet.....	1 25
Same.....	2d ".....	75
Same.....	Best breeding pen.....	2 00

POULTRY—GOLDEN DUCK-WING GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.	Best cock	\$1 25.
Same	Best hen	1 25.

SILVER DUCK-WING GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.	Best cock	\$1 25.
Same	Best hen	1 25.

RED PILE GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.	Best cock	\$1 25.
Same	Best hen	1 25.

CORNISH INDIAN GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.	Best cock	\$1 25.
Hugh C. Beelman, Ashley, Ohio.	2d "	1 25.
Same	Best cockerel	1 25.
Same	2d "	1 25.
Same	Best hen	1 25.
Same	2d "	1 25.
Chas. Gammerdinger, Columbus, Ohio.	Best pullet	1 25.
G. R. Baxter, Hillsdale, Mich.	2d "	1 25.
Hugh C. Beelman, Ashley, Ohio.	Best breeding pen	2 00.
Chas. Gammerdinger, Columbus, Ohio.	2d "	1 00.

PIT GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. W. Kent & Co., Newark, Ohio.	Best cock	\$1 25.
Same	Best cockerel	1 25.
Same	2d "	1 25.
Same	Best hen	1 25.
Same	Best pullet	1 25.
Same	2d "	1 25.

PREMIUM AWARDS.

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POULTRY—B. B. R. BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
L. Rottman, Benton, Ohio.....	Best cock.....	\$1 25
Chas. McClave, New London, Ohio.....	2d ".....	75
L. Rottman, Benton, Ohio.....	Best cockerel.....	1 25
M. M. Myers, New Dover, Ohio.....	2d ".....	75
L. Rottman, Benton, Ohio.....	Best hen.....	1 25
Same.....	2d ".....	75
Same.....	Best pullet.....	1 25
W. Shallenberger, Amanda, Ohio.....	2d ".....	75

GOLDEN DUCK-WING BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
W. Shallenberger, Amanda, Ohio.....	Best cock.....	\$1 25
Same.....	2d ".....	75
L. Rottman, Benton, Ohio.....	Best cockerel.....	1 25
W. Shallenberger, Amanda, Ohio.....	2d ".....	75
Same.....	Best hen.....	1 25
G. R. Baxter, Hillsdale, Mich.....	2d ".....	75
C. W. Kent & Co., Newark, Ohio.....	Best pullet.....	1 25
L. Rottman, Benton, Ohio.....	2d ".....	75

SILVER DUCK-WING BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
G. R. Baxter, Hillsdale, Mich.....	Best cock.....	\$1 25
Chas. Gammerdinger, Columbus, Ohio.....	2d ".....	75
W. Shallenberger, Amanda, Ohio.....	Best cockerel.....	1 25
Same.....	Best hen.....	1 25
G. R. Baxter, Hillsdale, Mich.....	2d ".....	75
Same.....	Best pullet.....	1 25

RED PILE BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
L. Rottman, Benton, Ohio.....	Best cock.....	\$1 25
C. W. Kent & Co., Newark, Ohio.....	2d ".....	75
L. Rottman, Benton, Ohio.....	Best cockerel.....	1 25
Same.....	Best hen.....	1 25
Mell Parrott, Mt. Gilead, Ohio.....	2d ".....	75
L. Rottman, Benton, Ohio.....	Best pullet.....	1 25
Same.....	2d ".....	75

POULTRY—GOLDEN SEABRIGHT BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
S. H. Gast, Jr., Prospect, Ohio.....	Best cock.....	\$1 25
Chas. McClave, New London, Ohio.....	2d ".....	75
Mell Parrott, Mt. Gilead, Ohio.....	Best cockerel.....	1 25
Ira C. Keller, Prospect, Ohio.....	2d ".....	75
S. H. Gast, Jr., Prospect, Ohio.....	Best hen.....	1 25
Same.....	2d ".....	75
Ira C. Keller, Prospect, Ohio.....	Best pullet.....	1 25
L. Rottman, Benton, Ohio.....	2d ".....	75
S. H. Gast, Jr., Prospect, Ohio.....	Best breeding pen.....	2 00
Mell Parrott, Mt. Gilead, Ohio.....	2d ".....	1 00

SILVER SEABRIGHT BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Ira C. Keller, Prospect, Ohio.....	Best cock.....	\$1 25
S. H. Gast, Jr., Prospect, Ohio.....	2d ".....	75
Ira C. Keller, Prospect, Ohio.....	Best cockerel.....	1 25
Same.....	2d ".....	75
L. Rottman, Benton, Ohio.....	Best hen.....	1 25
Same.....	2d ".....	75
Ira C. Keller, Prospect, Ohio.....	Best pullet.....	1 25
L. Rottman, Benton, Ohio.....	2d ".....	75
Ira C. Keller, Prospect, Ohio.....	Best breeding pen.....	2 00
L. Rottman, Benton, Ohio.....	2d ".....	1 00

BUFF COCHIN BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
L. Rottman, Benton, Ohio.....	Best cock.....	\$1 25
S. H. Gast, Jr., Prospect, Ohio.....	2d ".....	75
Same.....	Best cockerel.....	1 25
Same.....	2d ".....	75
L. Rottman, Benton, Ohio.....	Best hen.....	1 25
S. H. Gast, Jr., Prospect, Ohio.....	2d ".....	75
Same.....	Best pullet.....	1 25
L. Rottman, Benton, Ohio.....	2d ".....	75
Same.....	Best breeding pen.....	2 00
S. H. Gast, Jr., Prospect, Ohio.....	2d ".....	1 00

WHITE ROSE-COMBED BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mell Parrott, Mt. Gilead, Ohio.....	Best cock.....	\$1 25
Same.....	2d ".....	75
Same.....	Best cockerel.....	1 25
Same.....	Best hen.....	1 25
Same.....	2d ".....	75
Same.....	Best pullet.....	1 25

POULTRY — BLACK ROSE-COMBED BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. McClave, New London, Ohio.....	Best cock	\$1 25
Mell Parrott, Mt. Gilead, Ohio	2d	75
Same	Best cockerel	1 25
L. Rottman, Benton, Ohio.....	2d	75
Chas. McClave, New London, Ohio.....	Best hen	1 25
Mell Parrott, Mt. Gilead, Ohio	2d	75
Same	Best pullet.....	1 25
L. Rottman, Benton, Ohio.....	2d	75

JAPANESE BANTAM.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. McClave, New London, Ohio.....	Best cock	\$1 25
Mell Parrott, Mt. Gilead, Ohio	2d	75
Same	Best cockerel	1 25
Same	2d	75
Same	Best hen	1 25
Same	2d	75
Chas. McClave, New London, Ohio.....	Best pullet.....	1 25
Mell Parrott, Mt. Gilead, Ohio	2d	75

TURKEYS.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
W. Shallenberger, Amanda, Ohio	Best bronze turkeys, old pair.....	\$2 00
Chas. McClave, New London, Ohio.....	2d	1 00
Same	Best " young pair.....	2 00
W. Shallenberger, Amanda, Ohio	2d	1 00
Same	Best white turkeys, old pair	2 00
Chas. Gammerdinger, Columbus, Ohio	2d	1 00
W. Shallenberger, Amanda, Ohio.....	Best white turkeys, young pair.....	2 00
Same	2d	1 00
Chas. Gammerdinger, Columbus, Ohio.....	Best buff turkeys, old pair.....	2 00
M. M. Meyers, New Dover, Ohio.....	2d	1 00
G. R. Baxter, Hillsdale, Mich.	Best " young pair.....	2 00
W. Shallenberger, Amanda, Ohio.....	" Narraganset turkeys, old pair.....	2 00
Same	" young pair.....	2 00
Chas. McClave, New London, Ohio.....	" black turkeys, old pair.....	2 00
M. M. Meyers, New Dover, Ohio.....	" young pair.....	2 00
Chas. McClave, New London, Ohio.....	2d	1 00
Same	Best slate turkeys, old pair.....	2 00
J. H. Cole, Berkshire, Ohio.....	2d	1 00
Chas. McClave, New London, Ohio.....	Best " young pair.....	2 00
M. M. Bargar, Mt. Gilead, Ohio.....	2d	1 00

POULTRY — DUCKS.

Owner,s Name and Postoffice.	Kind of Fowl.	Premium.
M. M. Myers, New Dover, Ohio.....	Best Pekin ducks, old pair.....	\$2 00
Mell Parrott, Mt. Gilead, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best " " " " " " " " " " " "	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best Aylesbury ducks, old pair.....	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
Same	Best " " " " " " " " " " " "	2 00
M. M. Myers, New Dover, Ohio.....	2d " " " " " " " " " " " "	1 00
Chas. Gammerdinger, Columbus, Ohio.....	Best Rouen ducks, old pair.....	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best " " " " " " " " " " " "	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best Cayuga ducks, old pair.....	2 00
W. Shallenberger, Amanda, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best " " " " " " " " " " " "	2 00
W. Shallenberger, Amanda, Ohio.....	2d " " " " " " " " " " " "	1 00
Same	Best crested white ducks, old pair.....	2 00
Chas. Gammerdinger, Columbus, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best " " " " " " " " " " " "	2 00
Chas. McClave, New London, Ohio.....	Best gray call ducks, old pair.....	2 00
M. M. Myers, New Dover, Ohio.....	2d " " " " " " " " " " " "	1 00
Same	Best " " " " " " " " " " " "	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
Chas. Gammerdinger, Columbus, Ohio.....	Best white call ducks, old pair.....	2 00
J. H. Cole, Berkshire, Ohio.....	2d " " " " " " " " " " " "	1 00
Chas. McClave, New London, Ohio.....	Best Muscovy colored ducks, old pair.....	2 00
M. M. Myers, New Dover, Ohio.....	2d " " " " " " " " " " " "	1 00
Chas. Gammerdinger, Columbus, Ohio.....	Best " " " " " " " " " " " "	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best Muscovy white ducks, old pair.....	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
Same	Best " " " " " " " " " " " "	2 00
M. M. Myers, New Dover, Ohio.....	2d " " " " " " " " " " " "	1 00

GEESE.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Mell Parrott, Mt. Gilead, Ohio.....	Best Toulouse, old pair.....	\$2 00
M. M. Myers, New Dover, Ohio.....	2d " " " " " " " " " " " "	1 00
Same	Best " " " " " " " " " " " "	2 00
J. H. Cole, Berkshire, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best Embden, old pair.....	2 00
W. Shallenberger, Amanda, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best " " " " " " " " " " " "	2 00
Same	Best African, old pair.....	2 00
J. H. Cole, Berkshire, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best " " " " " " " " " " " "	2 00
Same	Best brown Chinese, old pair.....	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best " " " " " " " " " " " "	2 00
Chas. McClave, New London, Ohio.....	2d " " " " " " " " " " " "	1 00
M. M. Myers, New Dover, Ohio.....	Best white, old pair.....	2 00
Mell Parrott, Mt. Gilead, Ohio.....	2d " " " " " " " " " " " "	1 00
Chas. McClave, New London, Ohio.....	Best " " " " " " " " " " " "	2 00
M. M. Myers, New Dover, Ohio.....	2d " " " " " " " " " " " "	1 00

POULTRY—PIGEONS.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Phillip Office, Columbus, Ohio.....	Best collection pigeons.....	\$ 5 00
Same	2d "	3 00

CLASS COLLECTIONS.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.....	Best collection American class.....	\$ 3 00
Same	" " Asiatic class.....	3 00
Same	" " Mediterranean class.....	3 00
Mrs. E. Gammerdinger, Columbus, Ohio....	" " Polish class.....	3 00
G. R. Baxter, Hillsdale, Mich.....	" " Hamburg class.....	3 00
Chas. Gammerdinger, Columbus, Ohio.....	" " Games and Game Bantams..	3 00
Mell Parrott, Mt. Gillead, Ohio.....	" " Bantams not Game.....	3 00
W. Shellenberger, Amanda, Ohio.....	" " turkeys	3 00
M. M. Myers, New Dover, Ohio.....	" " water fowls.....	3 00
Chas. Gammerdinger, Columbus, Ohio.....	" " and greatest variety poultry.	Sil. med.
C. V. Purvis, Cardington, Ohio.....	" incubator.....	Sil. med.

BUFF WYANDOTTES.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.....	Best cock.....	\$ 1 25
Same	" cockerel	1 25
Same	" hen	1 25
Same	" pullet	1 25

AMERICAN DOMINIQUE.

Owner's Name and Postoffice.	Kind of Fowl.	Premium
Chas. Gammerdinger, Columbus, Ohio.....	Best cock.....	\$ 1 25
Same	" cockerel	1 25
Same	" hen	1 25
Same	" pullet	1 25

POULTRY — WHITE MINORCA.

Owner's Name and Postoffice.	Kind of Fowl.	Premium.
Chas. Gammerdinger, Columbus, Ohio.....	Best cock.....	\$1 25
Same.....	" cockerel.....	1 25
Same.....	" hen.....	1 25
Same.....	" pullet.....	1 25

AWARDS IN DEPARTMENTS OTHER THAN LIVE STOCK.

FARM PRODUCTS—GRAIN, SEEDS AND CEREAL MILL PRODUCTS.

Owner's Name and Postoffice.	Name of Article.	Premium.
H. Bookwalter, Hallsville, Ohio.....	Best 20 pounds buckwheat flour	\$2 00
W. D. Whipps, Prospect, Ohio.....	Best half bushel white winter wheat.....	3 00
F. M. Whipps, Byhalia, Ohio.....	2d " " " " " " " " " " " "	2 00
Kellogg Stock Farm Co., Claridon, Ohio....	Best " " long berry winter wheat..	3 00
J. L. Keckley, Marysville, Ohio.....	2d " " " " " " " " " " " "	2 00
W. S. Keckly, Paulding, Ohio.....	Best " " any other variety wheat ...	3 00
Kellogg Stock Farm Co., Claridon, Ohio....	2d " " " " " " " " " " " "	2 00
Same.....	Best " " any variety amber wheat ..	3 00
W. D. Whipps, Prospect, Ohio.....	2d " " " " " " " " " " " "	2 00
A. Y. Knox, Pulaski, Pa.....	Best " " winter rye.....	3 00
J. L. Keckley, Marysville, Ohio.....	2d " " " " " " " " " " " "	2 00
Same.....	Best " " black oats	3 00
W. D. Whipps, Prospect, Ohio.....	2d " " " " " " " " " " " "	2 00
J. L. Keckley, Marysville, Ohio.....	Best " " white oats.....	3 00
F. M. Whipps, Byhalia, Ohio.....	2d " " " " " " " " " " " "	2 00
J. L. Keckley, Marysville, Ohio.....	Best " " winter barley	3 00
J. B. Keckley, Marysville, Ohio.....	2d " " " " " " " " " " " "	2 00
Same.....	Best " " spring barley	3 00
J. L. Keckley, Marysville, Ohio.....	2d " " " " " " " " " " " "	2 00
W. D. Whipps, Prospect, Ohio.....	Best " " silver hull buckwheat	3 00
J. L. Keckley, Marysville, Ohio.....	2d " " " " " " " " " " " "	2 00
W. D. Whipps, Prospect, Ohio.....	Best " " Japanese buckwheat	3 00
A. Neifer, Weston, Ohio.....	2d " " " " " " " " " " " "	2 00
W. D. Whipps, Prospect, Ohio.....	Best " " Russian flaxseed	3 00
J. L. Keckley, Marysville, Ohio.....	2d " " " " " " " " " " " "	2 00
Kellogg Stock Farm Co., Claridon, Ohio....	Best " " common flaxseed	3 00
A. Y. Knox, Pulaski, Pa.....	2d " " " " " " " " " " " "	2 00
W. D. Whipps, Prospect, Ohio.....	Best " " timothy seed	3 00
J. L. Keckley, Marysville, Ohio.....	2d " " " " " " " " " " " "	2 00
F. M. Whipps, Byhalia, Ohio.....	Best " " Kentucky blue grass seed ..	3 00
W. D. Whipps, Prospect, Ohio.....	2d " " " " " " " " " " " "	2 00
Same.....	Best " " large English clover seed ..	3 00
A. Neifer, Weston, Ohio.....	2d " " " " " " " " " " " "	2 00
W. D. Whipps, Prospect, Ohio.....	Best " " red clover seed	3 00
W. S. Keckley, Paulding, Ohio.....	2d " " " " " " " " " " " "	2 00
J. L. Keckley, Marysville, Ohio.....	Best " " orchard grass seed	3 00
Kellogg Stock Farm Co., Claridon, Ohio....	2d " " " " " " " " " " " "	2 00
F. M. Whipps, Byhalia, Ohio.....	Best " " millet seed	3 00
W. D. Whipps, Prospect, Ohio.....	2d " " " " " " " " " " " "	2 00
J. L. Keckley, Paulding, Ohio.....	Best " " Hungarian grass seed	3 00
Kellogg Stock Farm Co., Claridon, Ohio....	2d " " " " " " " " " " " "	2 00
C. W. Kent, Newark, Ohio.....	Best half peck Lima beans, dry.....	2 00
D. F. Corwin, Springboro, Ohio.....	2d " " " " " " " " " " " "	1 00
C. W. Kent, Newark, Ohio.....	Best peck marrowfat beans, dry.....	2 00
J. L. Keckley, Paulding, Ohio.....	2d " " " " " " " " " " " "	1 00
D. F. Corwin, Springboro, Ohio.....	Best " navy beans, dry	2 00
H. Bookwalter, Hallsville, Ohio.....	2d " " " " " " " " " " " "	1 00
J. L. Keckley, Paulding, Ohio.....	Best half peck white marrowfat peas ..	2 00
W. D. Whipps, Prospect, Ohio.....	2d " " " " " " " " " " " "	1 00
J. L. Keckley, Paulding, Ohio.....	Best " " Canada field peas	2 00
W. D. Whipps, Prospect, Ohio.....	2d " " " " " " " " " " " "	1 00
J. L. Keckley, Paulding, Ohio.....	Best display of grain.....	5 00
L. M. Gregg, Springboro, Ohio.....	Best 4 hands Ohio seed leaf tobacco....	3 00
D. F. Corwin, Springboro, Ohio.....	2d " " " " " " " " " " " "	2 00
Same.....	Best " white burley tobacco.....	3 00
L. M. Gregg, Springboro, Ohio.....	2d " " " " " " " " " " " "	2 00
A. Neifer, Weston, Ohio.....	Best " Little Dutch tobacco	3 00
D. F. Corwin, Springboro, Ohio.....	2d " " " " " " " " " " " "	2 00
J. L. Keckley, Marysville, Ohio.....	Best variety garden, field and grass seeds..	5 00

FARM PRODUCTS — CORN, ETC.

Owner's Name and Postoffice.	Name of Article.	Premium.
J. L. Keckley, Marysville, Ohio	Best display yellow corn	\$5 00
D. F. Corwin, Springboro, Ohio	2d " "	3 00
J. L. Keckley, Marysville, Ohio	Best " white corn	5 00
D. F. Corwin, Springboro, Ohio	2d " "	3 00
Same	Best " sweet corn	3 00
W. D. Whipps, Prospect, Ohio	2d " "	2 00
J. L. Keckley, Marysville, Ohio	Best " pop corn	3 00
H. Bookwalter, Hallsville, Ohio	2d " "	2 00
W. D. Whipps, Prospect, Ohio	Best specimen dried corn	2 00
H. A. Bieber, Delaware, Ohio	2d " "	1 00
L. M. Gregg, Springboro, Ohio	Best 20 pounds broom corn	3 00
D. F. Corwin, Springboro, Ohio	2d " "	2 00
W. D. Whipps, Prospect, Ohio	Best 10 pounds hops	2 00

CHEESE AND BUTTER.

Owner's Name and Postoffice.	Name of Article.	Premium.
Isaly Bros., Columbus, Ohio	Best display of cheese	\$15 00
D. L. Pope, Welshfield, Ohio	2d " "	10 00
M. S. King, Newark, Ohio	Best package dairy butter	5 00
Mary F. Maxwell, Reynoldsburg, Ohio	Best exhibit dairy butter	8 00
A. W. Graham, Reynoldsburg, Ohio	2d " "	5 00
D. L. Pope, Welshfield, Ohio	Best exhibit creamery butter	8 00
Mrs. M. McCray, Reynoldsburg, Ohio	2d " "	5 00

POTATOES AND OTHER ROOT PRODUCTS.

Owner's Name and Postoffice.	Name of Article.	Premium.
W. D. Whipps, Prospect, Ohio	Best American Giant	\$2 00
W. S. Keckley, Paulding, Ohio	2d " "	1 00
F. M. Whipps, Byhalia, Ohio	Best Alexander Prolific	2 00
W. S. Keckley, Paulding, Ohio	2d " "	1 00
J. L. Keckley, Marysville, Ohio	Best Beauty of Hebron	2 00
W. S. Keckley, Paulding, Ohio	2d " "	1 00
W. D. Whipps, Prospect, Ohio	Best Burbank Seedling	2 00
A. Neifer, Weston, Ohio	2d " "	1 00
W. S. Keckley, Paulding, Ohio	Best Badger State	2 00
J. L. Keckley, Marysville, Ohio	2d " "	1 00
F. M. Whipps, Byhalia, Ohio	Best Brownell's Best	2 00
W. S. Keckley, Marysville, Ohio	2d " "	1 00
F. M. Whipps, Byhalia, Ohio	Best Banner	2 00
J. H. Knickerbocker, Edon, Ohio	2d " "	1 00
F. M. Whipps, Byhalia, Ohio	Best Bliss Triumph	2 00
J. L. Keckley, Paulding, Ohio	2d " "	1 00
W. D. Whipps, Prospect, Ohio	Best Buckeye State	2 00
F. M. Whipps, Byhalia, Ohio	2d " "	1 00
Same	Best Clark's No. 1	2 00
W. S. Keckley, Paulding, Ohio	2d " "	1 00
Evan Griffith, Newark, Ohio	Best Chicago Market	2 00
J. L. Keckley, Marysville, Ohio	2d " "	1 00
F. M. Whipps, Byhalia, Ohio	Best Dunmore Seedling	2 00
W. S. Keckley, Paulding, Ohio	2d " "	1 00
Same	Best Early Rose	2 00
F. M. Whipps, Byhalia, Ohio	2d " "	1 00

FARM PRODUCTS—POTATOES AND OTHER ROOT PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
J. L. Keckley, Marysville, Ohio	Best Early Ohio	2 00
W. S. Keckley, Paulding, Ohio	2d "	1 00
J. L. Keckley, Marysville, Ohio	Best Early Puritan	2 00
F. M. Whipps, Byhalia, Ohio	2d "	1 00
W. S. Keckley, Paulding, Ohio	Best Early Mayflower	2 00
J. L. Keckley, Marysville, Ohio	2d "	1 00
Same	Best Empire State	2 00
F. M. Whipps, Byhalia, Ohio	2d "	1 00
J. L. Keckley, Marysville, Ohio	Best Freeman	2 00
W. D. Whipps, Prospect, Ohio	2d "	1 00
J. L. Keckley, Marysville, Ohio	Best Jumbo	2 00
F. M. Whipps, Byhalia, Ohio	2d "	1 00
Kellogg Stock Farm Co., Claridon, Ohio	Best Green Mountain	2 00
W. D. Whipps, Prospect, Ohio	2d "	1 00
F. M. Whipps, Byhalia, Ohio	Best Lee's Favorite	2 00
W. D. Whipps, Prospect, Ohio	2d "	1 00
F. M. Whipps, Byhalia, Ohio	Best Mammoth Pearl	2 00
J. L. Keckley, Marysville, Ohio	2d "	1 00
Same	Best Potentate	2 00
W. D. Whipps, Prospect, Ohio	2d "	1 00
J. P. Grubb, Mortimer, Ohio	Best Polaris	2 00
W. S. Keckley, Paulding, Ohio	2d "	1 00
F. M. Whipps, Byhalia, Ohio	Best Queen of the Valley	2 00
J. L. Keckley, Marysville, Ohio	2d "	1 00
F. M. Whipps, Byhalia, Ohio	Best Rural New Yorker No. 2	2 00
E. G. Stockman, Prospect, Ohio	2d "	1 00
W. S. Keckley, Paulding, Ohio	Best Seneca Beauty	2 00
E. S. Tussing, Canal Winchester, Ohio	2d "	1 00
F. M. Whipps, Byhalia, Ohio	Best Victor	2 00
W. S. Keckley, Paulding, Ohio	2d "	1 00
Same	Best Vaughn	2 00
F. M. Whipps, Byhalia, Ohio	2d "	1 00
W. S. Keckley, Paulding, Ohio	Best White Elephant	2 00
F. M. Whipps, Byhalia, Ohio	2d "	1 00
Same	Best White Star	2 00
J. L. Keckley, Marysville, Ohio	2d "	1 00
Kellogg Stock Farm Co., Claridon, Ohio	Best peck new variety	2 00
J. P. Grubb, Mortimer, Ohio	2d "	1 00
W. S. Keckley, Paulding, Ohio	Best display Irish potatoes	15 00
F. M. Whipps, Byhalia, Ohio	2d "	10 00
C. W. Kent, Newark, Ohio	Best peck yellow sweet potatoes	2 00
E. S. Tussing, Canal Winchester, Ohio	2d "	1 00
Same	Best peck red sweet potatoes	2 00
Wm. Boyer, Mason, Ohio	2d "	1 00
E. S. Tussing, Canal Winchester, Ohio	Best peck red yams	2 00
Wm. Boyer, Mason, Ohio	2d "	1 00
E. S. Tussing, Canal Winchester, Ohio	Best peck white yams	2 00
Wm. Boyer, Mason, Ohio	2d "	1 00
E. S. Tussing, Canal Winchester, Ohio	Best display sweet potatoes	5 00
Wm. Boyer, Mason, Ohio	2d "	8 00
W. D. Whipps, Prospect, Ohio	Best 12 parsnips	2 00
A. Neifer, Weston, Ohio	2d "	1 00
C. J. Crafts, E. Toledo, Ohio, Sta. A.	Best 12 Danver's carrots	2 00
E. S. Tussing, Canal Winchester, Ohio	2d "	1 00
Same	Best 12 long orange carrots	2 00
A. Neifer, Weston, Ohio	2d "	1 00
C. J. Crafts, E. Toledo, Ohio	Best 12 stump-rooted carrots	2 00
A. Neifer, Weston, Ohio	2d "	1 00
E. S. Tussing, Canal Winchester, Ohio	Best display carrots	3 00
J. P. Grubb, Mortimer, Ohio	2d "	2 00
W. D. Whipps, Prospect, Ohio	Best 12 roots salsify	2 00
A. Neifer, Weston, Ohio	2d "	1 00
W. D. Whipps, Prospect, Ohio	Best 6 long blood beets	2 00
E. S. Tussing, Canal Winchester, Ohio	2d "	1 00
A. G. Knox, Pulaski, Pa.	Best 6 turnip beets	2 00
E. S. Tussing, Canal Winchester, Ohio	2d "	1 00
W. S. Keckley, Paulding, Ohio	Best 6 white sugar beets	2 00
E. S. Tussing, Canal Winchester, Ohio	2d "	1 00
Same	Best 6 red mangel wurzels	2 00
Same	2d "	1 00
J. C. Grubb, Mortimer, Ohio	Best 6 kohlrabi	2 00
J. L. Keckley, Marysville, Ohio	2d "	1 00
E. S. Tussing, Canal Winchester, Ohio	Best 6 yellow mangel wurzels	2 00
Same	2d "	1 00
Same	Best display beets	5 00
J. P. Grubb, Mortimer, Ohio	2d "	3 00
A. G. Knox, Pulaski, Pa.	Best 6 rutabagas	2 00
J. P. Grubb, Mortimer, Ohio	2d "	1 00

FARM PRODUCTS—VEGETABLES—Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
W. D. Whipps, Prospect, Ohio.....	Best 12 ears early sweet corn.....	2 00
C. J. Crofts, E. Toledo, Ohio.....	2d " " " " " " " " " " " "	1 00
E. S. Tussing, Canal Winchester, Ohio.....	Best 12 ears late sweet corn.....	2 00
W. D. Whipps, Prospect, Ohio.....	2d " " " " " " " " " " " "	1 00
E. S. Tussing, Canal Winchester, Ohio.....	Best display of sweet corn.....	5 00
C. W. Kent, Newark, Ohio.....	2d " " " " " " " " " " " "	3 00
E. S. Tussing, Canal Winchester, Ohio.....	Best display of garden beans.....	3 00
J. P. Grubb, Mortimer, Ohio.....	2d " " " " " " " " " " " "	2 00
Same.....	Best heaviest watermelon.....	2 00
E. S. Tussing, Canal Winchester, Ohio.....	2d " " " " " " " " " " " "	1 00
Kellogg Stock Farm Co., Claridon, Ohio.....	Best heaviest pumpkin.....	2 00
E. S. Tussing, Canal Winchester, Ohio.....	2d " " " " " " " " " " " "	1 00
A. Y. Knox, Pulaski, Pa.....	Best heaviest squash.....	2 00
J. L. Keeckley, Marysville, Ohio.....	2d " " " " " " " " " " " "	1 00
J. P. Grubb, Mortimer, Ohio.....	Best display watermelons.....	5 00
E. S. Tussing, Canal Winchester, Ohio.....	2d " " " " " " " " " " " "	3 00
Same.....	Best display nutmeg muskmelons.....	5 00
J. P. Grubb, Mortimer, Ohio.....	2d " " " " " " " " " " " "	3 00
E. S. Tussing, Canal Winchester, Ohio.....	Best display cucumbers.....	2 00
C. J. Crofts, E. Toledo, Ohio.....	2d " " " " " " " " " " " "	1 00
J. L. Keeckley, Marysville, Ohio.....	Best 3 purple egg plants.....	2 00
J. P. Grubb, Mortimer, Ohio.....	2d " " " " " " " " " " " "	1 00
E. S. Tussing, Canal Winchester, Ohio.....	Best display of vegetables.....	20 00
C. J. Crofts, E. Toledo, Ohio.....	2d " " " " " " " " " " " "	10 00

COUNTY EXHIBIT OF FARM PRODUCTS.

Owner's Name and Postoffice.	Name of Article.	Premium.
J. L. Keckley, Marysville, Ohio.....	Best county exhibit.....	\$ 75 00
D. F. Corwin, Springboro, Ohio.....	2d "	50 00
W. D. Whipps, Prospect, Ohio.....	3d "	35 00
Kellogg Stock Farm Co., Claridon, Ohio.....	4th "	25 00

BEES AND HONEY.

Owner's Name and Postoffice.	Name of Article.	Premium.
J. C. Boynton, Delaware, Ohio.....	Best crate comb honey.....	\$ 5 00
Geo. H. Kirkpatrick, Union City, Ind.	2d " " "	" 0 00
Same	Best display of comb honey	10 00
J. C. Boynton, Delaware, Ohio.....	2d " " "	5 00
Geo. H. Kirkpatrick, Union City, Ind.	Best 12 one-pound sections.....	4 00
J. C. Boynton, Delaware, Ohio.....	2d " " "	2 00
Same	Best display extracted honey	5 00
Geo. H. Kirkpatrick, Union City, Ind.	2d " " "	3 00
Same	Best display of honey	10 00
J. C. Boynton, Delaware, Ohio.....	2d " " "	5 00
T. C. Brece, West Berlin, Ohio.....	Best nucleus Italian bees	5 00
W. T. Easton, Watkins, Ohio.....	2d " " "	3 00
Geo. H. Kirkpatrick, Union City, Ind.	Best display queen bees.....	3 00
W. T. Easton, Watkins, Ohio.....	2d " " "	1 00
J. C. Boynton, Delaware, Ohio.....	Best sample of beeswax.....	2 00

FARM PRODUCTS—APIARIAN SUPPLIES.

Owner's Name and Postoffice.	Name of Article.	Premium.
J. C. Boynton, Delaware, Ohio.....	Best sample comb foundation.....	\$ 2 00
Same.....	" " for surplus honey.....	2 00
Geo. H. Kirkpatrick, Union City, Ind.....	" beeswax extractor.....	2 00
J. C. Boynton, Delaware, Ohio.....	" bee smoker.....	2 00
Same.....	" uncapping knife.....	1 00
T. C. Breece, West Berlin, Ohio.....	" bee veil.....	1 00
Same.....	" feeder.....	2 00
Geo. H. Kirkpatrick, Union, City, Ind.....	" honey extractor.....	2 00
Same.....	" shipping case for comb honey.....	2 00
Same.....	" general purpose bee hive.....	3 00
T. C. Breece, West Berlin, Ohio.....	" arrangement for absorbing moisture and retaining heat.....	1 00

MAPLE PRODUCTS.

Owner's Name and Postoffice.	Name of Article.	Premium.
H. T. Clark, Claridon, Ohio.....	Best gallon maple syrup.....	\$ 2 00
H. W. Wells, Claridon, Ohio.....	2d ".....	1 00
A. A. McNish, Claridon, Ohio.....	Best 3 bricks maple sugar.....	2 00
Kellogg Stock Farm Co., Claridon, Ohio.....	2d ".....	1 00
Same.....	Best design in maple sugar.....	3 00
E. G. Taggart, Lewis Center, Ohio.....	2d ".....	2 00
Kellogg Stock Farm Co., Claridon, Ohio.....	Best five pound grained maple sugar.....	2 00
E. L. Wilmont, Claridon, Ohio.....	2d ".....	1 00
H. N. Ensign, Claridon, Ohio.....	Best display maple wax.....	2 00
E. L. Wilmont, Claridon, Ohio.....	2d ".....	1 00
Geauga Co. Sugar Makers' Ass'n, Claridon, O.	Best display maple products from any one county.....	10 00
Ava and Ida Main, Delaware, Ohio.....	2d display maple products from any one county.....	5 00
Ohio Maple Sugar Co., Burton Ohio.....	Best display maple products by a dealer.....	Sil. Med

FRUITS—SUMMER AND FALL APPLES.

Owner's Name and Postoffice.	Name of Article.	Premium.
W. H. West, Chillicothe, Ohio.....	Best 6 varieties family use.....	\$ 4 00
H. Bookwalter, Hallsville, Ohio.....	2d ".....	2 00
Same.....	Best 3 varieties family use.....	3 00
W. W. Farnsworth, Waterville, Ohio.....	2d ".....	2 00
John S. Suider, Lancaster, Ohio.....	Best approved new variety.....	2 00
J. R. Hurst, Chillicothe, Ohio.....	2d ".....	1 00
W. H. Ortman, Andersonville, Ohio.....	Best 3 varieties.....	3 00
L. M. Ayers, Urbana, Ohio.....	2d ".....	2 00
W. H. West, Chillicothe, Ohio.....	Best 3 varieties for market.....	3 00
C. R. Elsea, Lithopolis, Ohio.....	2d ".....	2 00
W. H. Ortman, Andersonville, Ohio.....	Best variety summer dessert.....	2 00
C. R. Elsea, Lithopolis, Ohio.....	2d ".....	1 00
H. Bookwalter, Hallsville, Ohio.....	Best variety fall dessert.....	2 00
G. N. Toots, Chillicothe, Ohio.....	2d ".....	1 00
E. G. Stockman, Prospect, Ohio.....	Best display 10 varieties.....	6 00
W. H. West, Chillicothe, Ohio.....	2d ".....	3 00

FRUITS — WINTER APPLES.

Owner's Name and Postoffice.	Name of Article.	Premium.
W. W. Farnsworth, Waterville, Ohio.....	Best 12 varieties	\$ 8 00
Daniel Duer, Millersburg, Ohio.....	2d "	4 00
H. Bookwalter, Hallsville, Ohio.....	Best 6 varieties	4 00
S. H. Hurst, Chillicothe, Ohio.....	2d "	2 00
L. M. Ayres, Urbana, Ohio.....	Best 6 plates	4 00
E. G. Stockman, Prospect, Ohio.....	2d "	2 00
Same.....	Best variety of dessert	2 00
G. N. Toops, Chillicothe, Ohio.....	2d "	1 00
M. I. Shively, Frankfort, Ohio.....	Best approved new variety.....	2 00
D. V. Kuhn, Chillicothe, Ohio.....	2d "	1 00
Jas. E. Carpenter, Republic, Ohio.....	Best 6 varieties for market.....	4 00
H. C. Strow & Sons, Milford Center, Ohio.....	2d "	2 00
E. G. Stockman, Prospect, Ohio.....	Best display 25 varieties.....	10 00
Daniel Duer, Millersburg, Ohio.....	2d "	5 00

PLATE APPLES — WINTER.

Owner's Name and Postoffice.	Name of Article.	Premium.
E. G. Stockman, Prospect, Ohio.....	Best plate Baldwin.....	\$ 2 00
O. E. Foster, North Amherst, Ohio.....	2d "	1 00
H. C. Strow & Son, Milton Center, Ohio.....	Best " Baltimore.....	2 00
T. S. Johnson, Gypsum, Ohio.....	2d "	1 00
H. C. Strow & Son, Milton Center, Ohio.....	Best " Bailey's Sweet.....	2 00
C. F. Henon, Marshfield, Ohio.....	2d "	1 00
H. Bookwalter, Hallsville, Ohio.....	Best " Belleflower, yellow.....	2 00
J. R. Hurst, Chillicothe, Ohio.....	2d "	1 00
E. G. Stockman, Prospect, Ohio.....	Best " Belmont.....	2 00
T. S. Johnson, Gypsum, Ohio.....	2d "	1 00
R. J. Black, Bremen, Ohio.....	Best " Kaighn's Spitzenburg.....	2 00
W. H. West, Chillicothe, Ohio.....	2d "	1 00
E. G. Stockman, Prospect, Ohio.....	Best " King, Tompkins County.....	2 00
T. S. Johnson, Gypsum, Ohio.....	2d "	1 00
W. H. Ortman, Andersonville, Ohio.....	Best " Limber Twig.....	2 00
H. Bookwalter, Hallsville, Ohio.....	2d "	1 00
R. J. Black, Bremen, Ohio.....	Best " Newton Pippin.....	2 00
J. R. Hurst, Chillicothe, Ohio.....	2d "	1 00
H. Bookwalter, Hallsville, Ohio.....	Best " Northern Spy.....	2 00
L. M. Ayres, Urbana, Ohio.....	2d "	1 00
E. G. Cox, Ensee, Ohio.....	Best " Stark.....	2 00
J. R. Hurst, Chillicothe, Ohio.....	2d "	1 00
W. W. Farnsworth, Waterville, Ohio.....	Best " Summer Queen.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d "	1 00
W. W. Farnsworth, Waterville, Ohio.....	Best " Tallman Sweet.....	2 00
Ellen Dunlap, Andersonville, Ohio.....	2d "	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Wagener.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d "	1 00
H. Bookwalter, Hallsville, Ohio.....	Best " White Pippin.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d "	1 00
O. E. Foster, North Amherst, Ohio.....	Best " Ben Davis.....	2 00
J. R. Hurst, Chillicothe, Ohio.....	2d "	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Black Gilliflower.....	2 00
Nelson Cox, Ensee, Ohio.....	2d "	1 00
C. F. Herron, Marshfield, Ohio.....	Best " Blue Pearmain.....	2 00
L. M. Ayres, Urbana, Ohio.....	2d "	1 00
E. G. Stockman, Prospect, Ohio.....	Best " Cuyahoga Red Streak.....	2 00
J. R. Hurst, Chillicothe, Ohio.....	2d "	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Dominie.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d "	1 00
D. V. Kuhn, Chillicothe, Ohio.....	Best " Golden Russett, Am.....	2 00
G. N. Toops, Chillicothe, Ohio.....	2d "	1 00
C. F. Herron, Marshfield, Ohio.....	Best " Grimes' Golden.....	2 00
U. T. Cox, Ensee, Ohio.....	2d "	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Hubbardson Nonesuch.....	2 00
O. E. Foster, North Amherst, Ohio.....	2d "	1 00
G. N. Toops, Chillicothe, Ohio.....	Best " Jonathan.....	2 00
J. R. Hurst, Chillicothe, Ohio.....	2d "	1 00

FRUITS — WINTER APPLES — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
C. R. Elsea, Lithopolis, Ohio	Best plate Paradise Winter Sweet	\$2 00
W. H. Ortman, Andersonville, Ohio	2d " "	1 00
R. J. Black, Bremen, Ohio	Best " Pennock	2 00
Ira C. Keller, Prospect, Ohio	2d " "	1 00
T. S. Johnson, Gypsum, Ohio	Best " Peck's Pleasant	2 00
H. Bookwalter, Hallsville, Ohio	2d " "	1 00
T. S. Johnson, Gypsum, Ohio	Best " Rhode Island Greenings	2 00
W. W. Farnsworth, Waterville, Ohio	2d " "	1 00
E. G. Cox, Ensee, Ohio	Best " Rome Beauty	2 00
Nelson Cox, Ensee, Ohio	2d " "	1 00
I. Freeman, Rex, Ohio	Best " Roman Stern	2 00
J. R. Hurst, Chillicothe, Ohio	2d " "	1 00
Same	Best " Roxbury Russett	2 00
A. J. Trumbo & Son, Hanging Rock, Ohio	2d " "	1 00
S. H. Hurst, Chillicothe, Ohio	Best " Smith's Cider	2 00
P. P. Streevy, Chillicothe, Ohio	2d " "	1 00
C. R. Elsea, Lithopolis, Ohio	Best " Smoke House	2 00
L. M. Ayres, Urbana, Ohio	2d " "	1 00
H. Bookwalter, Hallsville, Ohio	Best " Wine Sap	2 00
W. H. Ortman, Andersonville, Ohio	2d " "	1 00
T. S. Johnson, Gypsum, Ohio	Best " Esopus Spitzenburg	2 00
C. F. Herron, Marshfield, Ohio	2d " "	1 00
Ira C. Keller, Prospect, Ohio	Best " Fallawater	2 00
T. S. Johnson, Gypsum, Ohio	2d " "	1 00
E. G. Stockman, Prospect, Ohio	Best " Rambo	2 00
C. F. Herron, Marshfield, Ohio	2d " "	1 00
E. G. Stockman, Prospect, Ohio	Best " Rawles Janet	2 00
O. C. Stockman, Prospect, Ohio	2d " "	1 00
T. S. Johnson, Gypsum, Ohio	Best " Red Canada	2 00
E. G. Stockman, Prospect, Ohio	2d " "	1 00
C. R. Elsea, Lithopolis, Ohio	Best " Willow Twig	2 00
H. Bookwalter, Hallsville, Ohio	2d " "	1 00
C. R. Elsea, Lithopolis, Ohio	Best " York Imperial	2 00
U. T. Cox, Ensee, Ohio	2d " "	1 00

SUMMER AND FALL.

Owner's Name and Postoffice.	Name of Article.	Premium.
E. G. Stockman, Prospect, Ohio	Best plate Alexander	\$2 00
L. M. Gregg, Springboro, Ohio	2d " "	1 00
J. R. Hurst, Chillicothe, Ohio	Best " American Summer Pearmain	2 00
W. H. West, Chillicothe, Ohio	2d " "	1 00
G. N. Toops, Chillicothe, Ohio	Best " Sweet Bough	2 00
E. V. Rhoades, St. Paris, Ohio	2d " "	1 00
H. Bookwalter, Hallsville, Ohio	Best " Benoni	2 00
W. H. West, Chillicothe, Ohio	2d " "	1 00
E. G. Stockman, Prospect, Ohio	Best " Beauty of Kent	2 00
Jas. E. Carpenter, Republic, Ohio	Best " Chenango Strawberry	2 00
H. Bookwalter, Hallsville, Ohio	2d " "	1 00
T. S. Johnson, Gypsum, Ohio	Best " Duchess of Oldenburg	2 00
E. G. Stockman, Prospect, Ohio	2d " "	1 00
T. S. Johnson, Gypsum, Ohio	Best " Fall Pippin	2 00
W. H. West, Chillicothe, Ohio	2d " "	1 00
Same	Best " Fall Wine	2 00
R. J. Black, Bremen, Ohio	2d " "	1 00
L. M. Gregg, Springboro, Ohio	Best " Fameuse	2 00
E. G. Stockman, Prospect, Ohio	2d " "	1 00
J. B. Youtsey, Troy, Ohio	Best " Gravenstein	2 00
Daniel Duer, Millersburg, Ohio	2d " "	1 00
E. G. Stockman, Prospect, Ohio	Best " Jeffries	2 00
O. C. Stockman, Prospect, Ohio	2d " "	1 00
C. W. Counter, North Toledo, Ohio	Best " Lowell	2 00
E. G. Stockman, Prospect, Ohio	2d " "	1 00
W. H. Ortman, Andersonville, Ohio	Best " Maiden's Blush	2 00
U. T. Cox, Ensee, Ohio	2d " "	1 00
W. W. Farnsworth, Waterville, Ohio	Best " Ohio Nonpareil	2 00
C. W. Counter, North Toledo, Ohio	2d " "	1 00

FRUITS—SUMMER AND FALL APPLES—Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
W. W. Farnsworth, Waterville, Ohio.....	Best plate Yellow Transparent	\$2 00
C. W. Counter, North Toledo, Ohio.....	2d "	1 00
L. M. Gregg, Springboro, Ohio.....	Best " Porter	2 00
G. N. Toops, Chillicothe, Ohio.....	2d " "	1 00
O. E. Foster, North Amherst, Ohio.....	Best " Red Astrachan	2 00
D. V. Kuhn, Chillicothe, Ohio.....	2d " "	1 00
W. W. Farnsworth, Waterville, Ohio.....	Best " Summer Queen	2 00
C. W. Counter, North Toledo, Ohio.....	2d " "	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Summer Strawberry	2 00
W. H. West, Chillicothe, Ohio.....	2d " "	1 00
I. Freeman, Rex, Ohio.....	Best " St. Lawrence	2 00
E. G. Stockman, Prospect, Ohio.....	2d " "	1 00
C. F. Herron, Marshfield, Ohio.....	Best " Wealthy	2 00
E. G. Stockman, Prospect, Ohio.....	2d " "	1 00
W. H. Ortman, Andersonville, Ohio.....	Best " Western Beauty	2 00
J. R. Hurst, Chillicothe, Ohio.....	2d " "	1 00

CRAB APPLES.

Owner's Name and Postoffice.	Name of Article.	Premium.
C. F. Herron, Marshfield, Ohio.....	Best plate Hugh's Virginia	\$2 00
L. M. Gregg, Springboro, Ohio.....	2d "	1 00
C. F. Herron, Marshfield, Ohio.....	Best " Hyslop	2 00
P. P. Streevey, Chillicothe, Ohio.....	2d "	1 00
H. Bookwalter, Hallsville, Ohio.....	Best " Red Siberian	2 00
E. G. Stockman, Prospect, Ohio.....	2d "	1 00
I. Freeman, Rex, Ohio.....	Best " Red Kentucky	2 00
G. N. Toops, Chillicothe, Ohio.....	2d "	1 00
E. G. Stockman, Prospect, Ohio.....	Best " Yellow Siberian	2 00
H. Bookwalter, Hallsville, Ohio.....	2d "	1 00
E. G. Stockman, Prospect, Ohio.....	Best " Transcendent	2 00
D. V. Kuhn, Chillicothe, Ohio.....	2d "	1 00
G. N. Toops, Chillicothe, Ohio.....	Best " Whitney's No. 20.....	2 00
C. R. Elsea, Lithopolis, Ohio.....	2d "	1 00

PEACHES.

Owner's Name and Postoffice.	Name of Article.	Premium.
T. S. Johnson, Gypsum, Ohio.....	Best 6 varieties	\$4 00
C. W. Counter, North Toledo, Ohio.....	2d "	2 00
T. S. Johnson, Gypsum, Ohio.....	Best 3 varieties	3 00
W. W. Farnsworth, Waterville, Ohio.....	2d "	2 00
Jas. E. Carpenter, Republic, Ohio.....	Best new seedling	3 00
T. S. Johnson, Gypsum, Ohio.....	Best display	6 00
W. W. Farnsworth, Waterville, Ohio.....	2d "	4 00
C. W. Counter, North Toledo, Ohio.....	Best Clair's Choice.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d "	1 00
Same.....	Best Crawford Early	2 00
C. W. Counter, North Toledo, Ohio.....	2d "	1 00
O. E. Foster, North Amherst, Ohio.....	Best Crawford Late.....	2 00
T. S. Johnson, Gypsum, Ohio.....	Best Elberty.....	2 00
Same.....	Best plate Hill's Chili.....	2 00
Same.....	Best " Jacques Yellow Rare Ripe.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d "	1 00
Same.....	Best " Large Early York.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d "	1 00
O. E. Foster, North Amherst, Ohio.....	Best " Lemon Cling	2 00

FRUITS — PEACHES — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
O. E. Foster, North Amherst, Ohio.....	Best plate Morris' White.....	\$ 2 00
C. W. Counter, North Toledo, Ohio.....	2d " ".....	1 00
C. W. Counter, North Toledo, Ohio.....	Best " Old Mixon Free.....	2 00
T. S. Johnson, Gypsum, Ohio.....	2d " ".....	1 00
Same.....	Best " Foster.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d " ".....	1 00
O. E. Foster, North Amherst, Ohio.....	Best " George the Fourth.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d " ".....	1 00
John P. Streeper, Columbus, Ohio.....	Best " Hale's Early.....	2 00
C. W. Counter, North Toledo, Ohio.....	Best " Heath Cling.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d " ".....	1 00
C. W. Counter, North Toledo, Ohio.....	Best " Heath Free.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	Best " Hill Home Chief.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d " ".....	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Reynolds.....	2 00
Same.....	Best " Red Cheeked Melocoton.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d " ".....	1 00
Jno. P. Streeper, Columbus, Ohio.....	Best " Salway.....	2 00
C. R. Elsea, Lithopolis, Ohio.....	Best " Smock Late Free.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d " ".....	1 00
Same.....	Best " Steadley.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d " ".....	1 00
O. E. Foster, North Amherst, Ohio.....	Best " Stump the World.....	2 00
T. S. Johnson, Gypsum, Ohio.....	2d " ".....	1 00
C. W. Counter, North Toledo, Ohio.....	Best " Stephen's Rare Ripe.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d " ".....	1 00
C. W. Counter, North Toledo, Ohio.....	Best " Wheeler's Late.....	2 00
T. S. Johnson, Gypsum, Ohio.....	Best " Wheatland.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d " ".....	1 00

QUINCES.

Owner's Name and Postoffice.	Name of Article.	Premium.
C. R. Elsea, Lithopolis, Ohio.....	Best plate Champion.....	\$ 2 00
H. Bookwalter, Hallsville, Ohio.....	2d " ".....	1 00
Same.....	Best " Much.....	2 00
J. Siebenehaler, Dayton, Ohio.....	Best " Ray's Mammoth.....	2 00
Mrs. M. Feldman, Columbus, Ohio.....	2d " ".....	1 00
C. F. Herrow, Marshfield, Ohio.....	Best " Orange.....	2 00
C. R. Elsea, Lithopolis, Ohio.....	2d " ".....	1 00
J. Siebenehaler, Dayton, Ohio.....	Best peck quinces.....	3 00
H. Bookwalter, Hallsville, Ohio.....	2d " ".....	1 00

PLUMS.

Owner's Name and Postoffice.	Name of Article.	Premium.
W. W. Farnsworth, Waterville, Ohio.....	Best plate Bradshaw.....	\$ 2 00
T. S. Johnson, Gypsum, Ohio.....	2d " ".....	1 00
E. V. Rhoades, St. Paris, Ohio.....	Best " Coe's Golden Drop.....	2 00
T. S. Johnson, Gypsum, Ohio.....	2d " ".....	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Duane's Purple.....	2 00
E. V. Rhoades, St. Paris, Ohio.....	2d " ".....	1 00
J. M. Carpenter, Republic, Ohio.....	Best " Imperial Gage.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d " ".....	1 00
W. H. West, Chillicothe, Ohio.....	Best " Lombard.....	2 00
Theo. F. Longenecker, Dayton, Ohio.....	2d " ".....	1 00

FRUITS — PLUMS — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium
T. S. Johnson, Gypsum, Ohio.....	Best " Pond's Seedling.....	\$2 00
Same.....	Best " Reine Claude.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d " ".....	1 00
W. H. West, Chillicothe, Ohio.....	Best " Shropshire.....	2 00
T. S. Johnson, Gypsum, Ohio.....	2d " ".....	1 00
Same.....	Best " any other variety.....	2 00
W. H. West, Chillicothe, Ohio.....	2d " ".....	1 00
W. W. Farnsworth, Waterville, Ohio.....	Best display not less than 10 varieties.....	5 00
E. V. Rhoades, St. Paris, Ohio.....	2d " " 10 ".....	3 00
W. W. Farnsworth, Waterville, Ohio.....	Best " " 5 ".....	3 00
T. S. Johnson, Gypsum, Ohio.....	2d " " 5 ".....	2 00

PEARS.

Owner's Name and Postoffice.	Name of Article.	Premium.
W. W. Farnsworth, Waterville, Ohio.....	Best 6 varieties.....	\$4 00
I. Freeman, Rex, Ohio.....	2d 6 ".....	3 00
C. W. Counter, North Toledo, Ohio.....	Best 10 ".....	5 00
I. Freeman, Rex, Ohio.....	2d 10 ".....	3 00
C. W. Counter, North Toledo, Ohio.....	Best 3 plates.....	3 00
E. G. Stockman, Prospect, Ohio.....	2d 3 ".....	2 00
C. L. Hurst, Chillicothe, Ohio.....	Best new variety.....	3 00
J. K. Hurst, Chillicothe, Ohio.....	Best variety of dessert.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	Best display 20 varieties.....	10 00
C. W. Counter, North Toledo, Ohio.....	2d 20 ".....	5 00
W. W. Farnsworth, Waterville, Ohio.....	Best plate Bartlett.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d ".....	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Belle Lucrative.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d ".....	1 00
T. Weltz, Wilmington, Ohio.....	Best " Beurre d'Anjou.....	2 00
E. V. Rhoades, St. Paris, Ohio.....	2d ".....	1 00
D. F. Corwin, Springboro, Ohio.....	Best " Beurre Bosc.....	2 00
L. M. Gregg, Springboro, Ohio.....	2d ".....	1 00
W. W. Farnsworth, Waterville, Ohio.....	Best " Beurre Clairgeau.....	2 00
Nelson Cox, Ensee, Ohio.....	2d ".....	1 00
C. R. Elsea, Lithopolis, Ohio.....	Best " Beurre Diehl.....	2 00
T. Weltz, Wilmington, Ohio.....	2d ".....	1 00
W. W. Farnsworth, Waterville, Ohio.....	Best " Clapp's Favorite.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d ".....	1 00
I. Freeman, Rex, Ohio.....	Best " Columbia.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d ".....	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Doyenne Bussoc.....	2 00
L. M. Ayres, Urbana, Ohio.....	2d ".....	1 00
T. S. Johnson, Gypsum, Ohio.....	Best " Duchesse.....	2 00
E. V. Rhoades, St. Paris, Ohio.....	2d ".....	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Flemish Beauty.....	2 00
E. V. Rhoades, St. Paris, Ohio.....	2d ".....	1 00
D. V. Kuhn, Chillicothe, Ohio.....	Best " Glout Morceau.....	2 00
T. Weltz, Wilmington, Ohio.....	Best " Howell.....	2 00
Mary Feldman, Columbus, Ohio.....	2d ".....	1 00
Same.....	Best " Josephine.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d ".....	1 00
Theo. F. Longenecker, Dayton, Ohio.....	Best " Kirtland.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d ".....	1 00
E. V. Rhoades, St. Paris, Ohio.....	Best " Keiffer.....	2 00
Mrs. Sue Williams, Columbus, Ohio.....	2d ".....	1 00
C. W. Counter, North Toledo, Ohio.....	Best " Lawrence.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d ".....	1 00
E. V. Rhoades, St. Paris, Ohio.....	Best " LeComte.....	2 00
Mrs. Sue Williams, Columbus, Ohio.....	2d ".....	1 00
Jas. E. Carpenter, Republic, Ohio.....	Best " Louise Bonne.....	2 00
M. C. Strow & Sons, Milton Center, Ohio.....	2d ".....	1 00
W. W. Farnsworth, Waterville, Ohio.....	Best " Onondaga.....	2 00
C. W. Counter, North Toledo, Ohio.....	2d ".....	1 00
Same.....	Best " President.....	2 00
T. Weltz, Wilmington, Ohio.....	2d ".....	1 00

FRUITS — PEARS — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
T. S. Johnson, Gypsum, Ohio.....	Best plate Seckel	\$2 00
W. H. Ortman, Andersonville, Ohio	2d "	1 00
C. W. Counter, North Toledo, Ohio.....	Best " Sheldon.....	2 00
W. W. Farnsworth, Waterville, Ohio.....	2d "	1 00
H. C. Strow & Sons, Milton Center, Ohio.....	Best " Vicar	2 00
I. Freeman, Rex, Ohio	2d "	1 00
D. V. Kuhn, Chillicothe, Ohio	Best " Winter Nellis	2 00
H. C. Strow & Sons, Milton Center, Ohio.....	2d "	1 00

GRAPES — HARDY.

Owner's Name and Postoffice.	Name of Article.	Premium.
Cushman Gladiolus Co., Euclid, Ohio.....	Best 20 varieties	\$10 00
E. M. Woodard, Kirtland, Ohio.....	2d 20 "	6 00
Cushman Gladiolus Co., Euclid, Ohio.....	Best 10 "	6 00
E. M. Woodard, Kirtland, Ohio.....	2d 10 "	4 00
Same	Best 6 "	4 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d 6 "	2 00
E. M. Woodard, Kirtland, Ohio.....	Best 3 "	3 00
John Siebenehaler, Dayton, Ohio.....	2d 3 "	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	Best 3 plates early table	3 00
John Siebenehaler, Dayton, Ohio.....	2d 3 "	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	Best 3 " for red wine	3 00
John Siebenehaler, Dayton, Ohio.....	2d 3 "	2 00
Same	Best 3 " for white wine	3 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d 3 "	2 00
John Siebenehaler, Dayton, Ohio.....	Best plate Agawam	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
Same	2d " Bacchus	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Brighton	2 00
W. H. West, Chillicothe, Ohio	2d "	1 00
John Siebenehaler, Dayton, Ohio.....	Best " Catawba	2 00
E. M. Woodard, Kirtland, Ohio.....	2d "	1 00
Same	Best " Concord	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Delaware	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
Same	Best " Diana	2 00
E. M. Woodard, Kirtland, Ohio.....	2d "	1 00
Cushman Gladiolus Co., Euclid, Ohio.....	Best " Duchess	2 00
E. M. Woodard, Kirtland, Ohio.....	2d "	1 00
John Siebenehaler, Dayton, Ohio.....	Best " Elvira	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
Same	Best " Empire State.....	2 00
W. H. West, Chillicothe, Ohio.....	2d "	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Green Mountain	2 00
Same	Best " Ives	2 00
John S. Snider, Lancaster, Ohio.....	2d "	1 00
Cushman Gladiolus Co., Euclid, Ohio.....	Best " Isabella.....	2 00
W. H. West, Chillicothe, Ohio	2d "	1 00
Cushman Gladiolus Co., Euclid, Ohio.....	Best " Iona	2 00
L. M. Ayres, Urbana, Ohio.....	2d "	1 00
Cushman Gladiolus Co., Euclid, Ohio.....	Best " Jefferson	2 00
E. M. Woodard, Kirtland, Ohio.....	2d "	1 00
Same	Best " Lady	2 00
John S. Snider, Lancaster, Ohio.....	2d "	1 00
W. H. West, Chillicothe, Ohio.....	Best " Lady Washington	2 00
C. F. Herron, Marshfield, Ohio.....	2d "	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Lindley	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Martha	2 00
Same	Best " Massasoit	2 00
John Siebenehaler, Dayton, Ohio.....	Best " Moore's Diamond	2 00
L. M. Ayres, Urbana, Ohio.....	2d "	1 00
C. W. Counter, North Toledo, Ohio.....	Best " Moore's Early	2 00
E. M. Woodard, Kirtland, Ohio.....	2d "	1 00
John Siebenehaler, Dayton, Ohio.....	Best " Moyer	2 00

PREMIUM AWARDS.

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FRUITS — GRAPES — HARDY — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
Cushman Gladiolus Co., Euclid, Ohio.....	2d plate Moyer	\$ 1 00
Same	Best " Nectar	2 00
Same	2d " Norton's Virginia.....	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Niagara	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Pockington.....	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
Same	Best " Salem.....	2 00
E. M. Woodard, Kirtland, Ohio.....	2d "	1 00
Same	Best " Vergennes.....	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
Same	Best " Wilder.....	2 00
John J. Snider, Lancaster, Ohio.....	2d "	1 00
Cushman Gladiolus Co., Euclid, Ohio.....	Best " Woodruff's Red.....	2 00
John Siebenchaler, Dayton, Ohio.....	2d "	1 00
E. M. Woodard, Kirtland, Ohio.....	Best " Worden.....	2 00
Cushman Gladiolus Co., Euclid, Ohio.....	2d "	1 00
Same	Best " Witt	2 00
Mrs. Martha Witt, Columbus, Ohio	2d "	1 00

COUNTY FRUITS.

Owner's Name and Postoffice.	Name of Article.	Premium.
W. W. Farnsworth, Waterville, Ohio.....	Best 100 plates fruits	\$ 70 00
E. M. Woodard, Kirtland, Ohio.....	2d 100 "	60 00
T. S. Johnson, Gypsum, Ohio.....	3d 100 "	50 00
Jas. E. Carpenter, Republic, Ohio.....	4th 100 "	40 00
L. M. Gregg, Springboro, Ohio	5th 100 "	30 00

FLOWERS AND PLANTS.

PLANTS.

Owner's Name and Postoffice.	Name of Article.	Premium.
E. L. Charles, Columbus, Ohio	Best collection plants	\$ 20 00
Geo. F. Brehmer, Chillicothe, Ohio	2d " "	10 00
E. L. Charles, Columbus, Ohio	Best " palms	10 00
Geo. F. Brehmer, Chillicothe, Ohio	2d " "	5 00
E. L. Charles, Columbus, Ohio	Best single specimen palm	5 00
Same	Best collection ferns	10 00
Geo. F. Brehmer, Chillicothe, Ohio	2d " "	5 00
Same	Best " variegated plants	10 00
E. L. Charles, Columbus, Ohio	2d " "	5 00
Same	Best " begonias	8 00
T. C. Breece, West Berlin, Ohio	2d " "	4 00
E. L. Charles, Columbus, Ohio	Best single specimen begonia	2 00
T. C. Breece, West Berlin, Ohio	Best collection cannas	8 00
E. L. Charles, Columbus, Ohio	2d " "	5 00
Same	Best " ornamental grasses	5 00
Geo. F. Brehmer, Chillicothe, Ohio	Best " crotons	10 00
E. L. Charles, Columbus, Ohio	2d " "	5 00
Same	Best " plants on trellis work	5 00
Geo. F. Brehmer, Chillicothe, Ohio	Best " aloes	5 00
E. L. Charles, Columbus, Ohio	2d " "	3 00
Geo. F. Brehmer, Chillicothe, Ohio	Best " fancy calladiums	5 00
E. L. Charles, Columbus, Ohio	2d " "	3 00
Geo. F. Brehmer, Chillicothe, Ohio	Best " new plants	5 00
T. C. Breece, West Berlin, Ohio	Best " geraniums	5 00
E. L. Charles, Columbus, Ohio	2d " "	2 00
Same	Best " asters	5 00
Geo. F. Brehmer, Chillicothe, Ohio	2d " "	3 00
E. L. Charles, Columbus, Ohio	Best ribbon-bed living plants	5 00
Same	" pair vases living plants	5 00
Same	" 6 hanging baskets	5 00
Same	" single basket	2 00

CUT FLOWERS.

Owner's Name and Postoffice.	Name of Article.	Premium.
E. L. Charles, Columbus, Ohio	2d best pair hand bouquets	\$ 2 00
Same	2d " " table	3 00
Same	Best display floral designs	20 00
Same	" single floral display	8 00
Geo. F. Brehmer, Chillicothe, Ohio	" display cut roses	5 00
E. L. Charles, Columbus, Ohio	2d " "	2 00
Geo. F. Brehmer, Chillicothe, Ohio	Best " cut dahlias	5 00
E. L. Charles, Columbus, Ohio	2d best decorated table	10 00
Cushman Gladiolus Co., Euclid, Ohio	Best display cut gladioli	5 00
E. L. Charles, Columbus, Ohio	2d " "	3 00
Same	Best " cut verbenas	5 00
Geo. F. Brehmer, Chillicothe, Ohio	2d " "	2 00
Same	Best " cut phloxes	5 00
E. L. Charles, Columbus, Ohio	2d " "	2 00
Same	Best " cut carnations	5 00
Geo. F. Brehmer, Chillicothe, Ohio	2d " "	3 00
E. L. Charles, Columbus, Ohio	Best " cut geraniums	5 00
Geo. F. Brehmer, Chillicothe, Ohio	3d " "	3 00
E. L. Charles, Columbus, Ohio	Best " cut flowers	10 00
Geo. F. Brehmer, Chillicothe, Ohio	2d " "	5 00

WOMAN'S WORK.

HOUSEHOLD FABRICS.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss Anna Miller, Quincy, Ill.	Best silk quilt (crazy)	\$3 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d " "	1 00
Mrs. W. R. Parsons, Worthington, Ohio	Best " (not crazy)	3 00
Miss Anna Miller, Quincy, Ill.	2d " "	1 00
Same	Best velvet quilt (large)	3 00
Mrs. E. Buck, Lockland, Ohio	2d " "	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	Best worsted quilt	2 00
Mrs. P. Grooms, Brecon, Ohio	2d " "	1 00
A. W. Graham, Reynoldsburg, Ohio	Best tog cabin quilt	2 00
Clara Deardurff, Columbus, Ohio	2d " "	1 00
Mrs. M. E. Schrock, Columbus, Ohio	Best white quilt	2 00
Mrs. P. Grooms, Brecon, Ohio	2d " "	1 00
Same	Best patchwork quilt	2 00
Mary P. Maxwell, Reynoldsburg, Ohio	2d " "	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	Best cradle quilt	2 00
Miss Anna Miller, Quincy, Ill.	2d " "	1 00
Mary P. Maxwell, Reynoldsburg, Ohio	Best cotton comfort	2 00
Ava and Ida Main, Delaware, Ohio	2d " "	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	Best worsted comfort	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	2d " "	1 00
Mrs. P. Grooms, Brecon, Ohio	Best hearth rug (rag)	1 00
Mrs. W. D. Perry, Columbus, Ohio	2d " "	50
Mrs. P. Grooms, Brecon, Ohio	Best hearth rug (yarn)	1 00
Miss Anna Miller, Quincy, Ill.	2d " "	50
Same	Best rag carpet (10 yards)	3 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d " "	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	Best domestic flannel (10 yards)	2 00
Mrs. P. Grooms, Brecon, Ohio	2d " "	1 00
A. W. Graham, Reynoldsburg, Ohio	Best domestic linen (2 yards)	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	2d " "	1 00
Miss M. Johnson, Dayton, Ohio	Best specimen darning	1 00
Mattie Armstrong, Newark, Ohio	2d " "	50

KNITTING.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. P. Grooms, Brecon, Ohio	Best pair woolen stockings	\$1 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d " "	50
Mrs. P. Grooms, Brecon, Ohio	Best " woolen socks	1 00
Mrs. V. Murphy, Columbus, Ohio	2d " "	50
Mrs. C. J. McClure, Xenia, Ohio	Best " woolen baby socks	1 00
Mrs. P. Grooms, Brecon, Ohio	2d " "	50
Mrs. E. Buck, Lockland, Ohio	Best " silk stockings	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d " "	50
Mrs. W. J. Carty, Columbus, Ohio	Best " silk socks	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d " "	50
Same	Best " silk mittens	1 00
E. Younglove, Toledo, Ohio	2d " "	50
Mrs. P. Grooms, Brecon, Ohio	Best " cotton stockings	1 00
Victoria Fields, Caledonia, Ohio	2d " "	50
Mrs. P. Grooms, Brecon, Ohio	Best " cotton socks	1 00
Mrs. H. Bieber, Delaware, Ohio	2d " "	50
E. Younglove, Toledo, Ohio	Best bed spread, knit	8 00
Mrs. John Gunderman, Marysville, Ohio	2d " "	2 00
Mrs. Grayson Dye, Troy, Ohio	Best tidy, knit	1 00
Miss Anna Miller Quincy, Ill.	2d " "	50

WOMAN'S WORK — MACHINE WORK — PROFESSIONAL.

Owner's Name and Postoffice.	Name of Article.	Premium.
Singer Manufacturing Co., Columbus, Ohio.	Best display machine work.....	Sil. Med

MILLINERY.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss L. Spencer, Xenia, Ohio.....	Best lady's hat.....	\$2 00
L. P. Warmen, Norwood, Ohio.....	2d ".....	1 00
Miss L. Spencer, Xenia, Ohio.....	Best lady's bonnet.....	2 00
L. P. Warmen, Norwood, Ohio.....	2d ".....	1 00
Miss L. Spencer, Xenia, Ohio.....	Best mourning bonnet.....	2 00
Mrs. C. J. McClure, Xenia, Ohio.....	2d ".....	1 00
Miss L. Spencer, Xenia, Ohio.....	2d child's hat.....	1 00
Same.....	Best child's bonnet.....	2 00
L. P. Warmen, Norwood, Ohio.....	2d ".....	1 00

CHILD'S CLASS.

Owner's Name and Postoffice.	Name of Article.	Premium.
Margaret Brady, Springfield, Ohio.....	Best specimen outline embroidery.....	\$1 00
Grace Inghram, Quincy, Ill.....	2d ".....	50
Same.....	Best " cross-stitch work.....	1 00
Miss Eliza Spencer, Xenia, Ohio.....	2d ".....	50
Deborah Rinehart, Marion, Ohio.....	Best " drawn thread work.....	1 00
Miss Jennie Johnson, Marion, Ohio.....	3d ".....	50
Margaret Brady, Springfield, Ohio.....	Best " crochet work.....	1 00
Mrs. B. R. Houser, Marion, Ohio.....	2d ".....	50
Miss Eliza Spencer, Xenia, Ohio.....	Best " paper flowers.....	1 00
L. M. Gregg, Springboro, Ohio.....	2d ".....	50
Miss Jennie Johnson, Marion, Ohio.....	Best " knitting.....	1 00
Grace Inghram, Quincy, Ill.....	2d ".....	50
Margaret Brady, Springfield, Ohio.....	Best " silk embroidery.....	1 00
Miss Belle Greenwood, Columbus, Ohio.....	2d ".....	50
L. M. Gregg, Springboro, Ohio.....	Best " patching.....	1 00
Mrs. Sue Williams, Columbus, Ohio.....	2d ".....	50
Margaret Brady, Springfield, Ohio.....	Best " fabric painting.....	1 00
Deborah Rinehart, Marion, Ohio.....	2d ".....	50

LACE AND TATTING WORK.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. O. J. Miller, Mt. Gilead, Ohio.....	Best point lace handkerchief.....	\$3 00
Mrs. L. E. Rockwell, Quincy, Ill.....	2d ".....	2 00
Mrs. P. Grooms, Brecon, Ohio.....	Best " collar.....	2 00
Mrs. O. J. Miller, Mt. Gilead, Ohio.....	2d ".....	1 00
Same.....	Best " infant's cap.....	2 00
Mrs. J. M. Cor, Mt. Gilead, Ohio.....	2d ".....	1 00

WOMAN'S WORK—OUTLINE EMBROIDERY.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. E. Buck, Lockland, Ohio.....	Best mantel lambrequin	\$2 00
L. P. Warmen, Norwood, Ohio.....	2d "	1 00
Mrs. L. E. Rockwell, Quincy, Ill.....	Best pillow shams.....	2 00
Same	2d "	1 00
Mrs. H. L. Young, Columbus, Ohio.....	Best lunch cloth.....	2 00
Mrs. Leon Snively, West Carrollton, Ohio.....	2d "	1 00
Miss Pearl Jackson, Cedarville, Ohio.....	Best lunch set	2 00
Mrs. C. J. McClure, Xenia, Ohio.....	Best tidy	1 00
Mrs. P. Grooms, Brecon, Ohio.....	2d "	50
Miss M. Johnson, Dayton, Ohio.....	Best splasher	1 00
Mrs. W. R. Sprague, Brice, Ohio.....	2d "	50
Miss Anna Miller, Quincy, Ill.....	Best pair towels	2 00
Mrs. C. J. McClure, Xenia, Ohio.....	2d "	1 00
Miss M. Johnson, Dayton, Ohio.....	Best table mats, five.....	2 00
Callie A. Pickey, Columbus, Ohio.....	2d "	1 00
Miss Mattie Hall, Lexington, Ky.....	Best tray cloth.....	1 00
Miss M. Johnson, Dayton, Ohio.....	2d "	50
Miss Mattie Hall, Lexington, Ky.....	Best 6 doylies.....	2 00
Miss L. Sheppard, Warrentown, Va.....	2d "	1 00
Miss Anna Miller, Quincy, Ill.....	Best specimen.....	1 00
Miss M. Johnson, Dayton, Ohio.....	2d "	50
Miss Mattie Hall, Lexington, Ky.....	Best display, 10 pieces.....	3 00
Mrs. L. Trimble, Marion, Ohio.....	2d "	2 00

EMBROIDERY—COTTON AND LINEN.

Owner's Name and Postoffice.	Name of Article.	Premium.
Alice B. Gill, Columbus, Ohio.....	Best night dress	\$2 00
Mrs. C. J. McClure, Xenia, Ohio.....	2d "	1 00
Same	Best chemise.....	2 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	2d "	1 00
Alice B. Gill, Columbus, Ohio.....	Best pillow shams.....	2 00
Mrs. C. J. McClure, Xenia, Ohio.....	2d "	1 00
Same	Best suit of underwear.....	2 00
Minnie Bieber, Delaware, Ohio.....	2d "	1 00
Mrs. L. E. Rockwell, Quincy, Ill.....	Best wall splasher.....	1 00
Miss M. Johnson, Dayton, Ohio.....	2d "	50
Mrs. C. J. McClure, Xenia, Ohio.....	Best pair towels	2 00
Suzanne E. Jordan, Chagrin Falls, Ohio.....	2d "	1 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	Best tidy	1 00
Mrs. L. E. Rockwell, Quincy, Ill.....	Best handkerchief.....	1 00
Miss M. Rinehart, Marion, Ohio.....	2d "	50
S. E. Jordan, Chagrin Falls, Ohio.....	Best specimen	2 00
Miss Pearl Jackson, Cedarville, Ohio.....	2d "	1 00

CROSS-STITCH.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. L. Trimble, Marion, Ohio.....	Best sofa pillow (made up).....	\$2 00
Miss Eliz. Leigh, Groveport, Ohio.....	2d "	1 00
Mrs. C. J. McClure, Xenia, Ohio.....	Best tidy.....	1 00
Mrs. Virginia Murphy, Columbus, Ohio.....	2d "	50
Miss Anna Miller, Quincy, Ill.....	Best large afghan	3 00
Mrs. L. Trimble, Marion, Ohio.....	2d "	2 00
Miss Anna Miller, Quincy, Ill.....	Best small afghan	2 00
Mrs. Chas. Higgins, Columbus, Ohio.....	2d "	1 00

WOMAN'S WORK — CROSS-STITCH — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. W. R. Sprague, Brice, Ohio.....	Best chair cushion	\$1 00
Miss M. Johnson, Dayton, Ohio	2d "	50
Mrs. Chas. Higgins, Columbus, Ohio.....	Best slippers.....	2 00
Mrs. C. J. McClure, Xenia, Ohio	2d "	1 00
Mrs. L. Trimble, Marion, Ohio.....	Best foot rest	2 00
Mrs. M. Rinehart, Marion, Ohio.....	2d "	1 00
Mrs. L. E. Rockwell, Quincy, Ill.....	Best specimen	1 00
Miss Anna Miller, Quincy, Ill	2d "	50
Same	Best display 5 pieces	3 00
Mrs. L. Trimble, Marion, Ohio	2d "	2 00

SILK EMBROIDERY.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. L. E. Rockwell, Quincy, Ill.....	Best lady's dress.....	\$3 00
Mrs. E. Buck, Lockland, Ohio	2d "	2 00
Mrs. Eliz. Leigh, Groveport, Ohio	Best lady's skirt	2 00
S. E. Jordan, Chagrin Falls, Ohio.....	2d "	1 00
Minnie Bieber, Delaware, Ohio	Best silk handkerchief.....	1 00
Clara Bieber, Delaware, Ohio.....	2d "	50
Mrs. W. R. Sprague, Brice, Ohio.....	Best child's dress.....	2 00
Miss Anna Miller, Quincy, Ill.....	2d "	1 00
Same	Best infant's cloak	2 00
Mrs. P. Grooms, Brecon, Ohio	2d "	1 00
Same	Best infant's shawl.....	2 00
Mrs. W. R. Sprague, Brice, Ohio.....	2d "	1 00
Mrs. L. E. Rockwell, Quincy, Ill.....	Best infant's skirt.....	2 00
Mrs. P. Grooms, Brecon, Ohio	2d "	1 00
Miss Anna Miller, Quincy, Ill.....	Best infant's saque.....	2 00
Mrs. L. E. Rockwell, Quincy, Ill.....	2d "	1 00
Mrs. E. H. Gibbons, Columbus, Ohio.....	Best specimen	2 00
Mrs. L. E. Rockwell, Quincy, Ill.....	2d "	1 00
Mrs. W. R. Sprague, Brice, Ohio.....	Best display 5 pieces	5 00
Miss Pearl Jackson, Cedarville, Ohio	2d "	2 00

ROMAN EMBROIDERY.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. Leon Snively, West Carrollton, Ohio...	Best center piece	\$2 00
Mrs. L. E. Rockwell, Quincy, Ill.....	2d "	1 00
Miss L. Sheppard, Warrenton, Va.....	2d best lunch cloth.....	1 00
Mrs. Leon Snively, West Carrollton, Ohio...	Best specimen	2 00
Mrs. E. Buck, Lockland, Ohio	2d "	1 00
Mrs. Leon Snively, West Carrollton, Ohio...	Best 6 doylies.....	2 00
Madge Miller, Washington, C. H., Ohio	2d "	1 00
Mrs. Leon Snively, West Carrollton, Ohio...	Best pin cushion.....	1 00
Mrs. E. Buck, Lockland, Ohio.....	2d "	50
Same	Best chair cushion	2 00
Mrs. E. G. Burk, Conover, Ohio.....	2d "	1 00
Mrs. C. H. Johnson, Belpre, Ohio	Best display	3 00
Mrs. F. G. Needham, Atwater, Ohio	2d "	2 00

WOMAN'S WORK—DRAWN THREAD WORK.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss Anna Miller, Quincy, Ill.	Best lunch cloth.....	\$2 00
Mrs. E. G. Buck, Conover, Ohio.....	2d ".....	1 00
Miss Anna Miller, Quincy, Ill.	Best tray cloth.....	2 00
L. P. Warmen, Norwood, Ohio.....	2d ".....	1 00
Miss May Conger, Columbus, Ohio.....	Best dresser scarf.....	2 00
Miss Anna Miller, Quincy, Ill.	2d ".....	1 00
L. P. Warmen, Norwood, Ohio.....	Best sideboard scarf.....	2 00
Mrs. E. Buck, Lockland, Ohio.....	2d ".....	1 00
Miss Anna Miller, Quincy, Ill.	Best 6 doilies.....	2 00
Miss Mattie Hall, Lexington, Ky.....	2d ".....	1 00
Mrs. C. C. Plank, Marion, Ohio.....	Best table cover.....	2 00
Mrs. E. G. Burk, Conover, Ohio.....	2d ".....	1 00
Mrs. L. E. Rockwell, Quincy, Ill.....	Best tidy.....	1 00
Miss Belle Lowes, Dayton, Ohio.....	2d ".....	50
Mrs. L. Trimble, Marion, Ohio.....	Best handkerchief.....	2 00
Mrs. O. J. Miller, Mt. Gilead, Ohio.....	2d ".....	1 00
Miss Anna Miller, Quincy, Ill.	Best specimen.....	2 00
Mrs. L. E. Rockwell, Quincy, Ill.....	2d ".....	1 00
Miss Anna Miller, Quincy, Ill.	Best display.....	3 00
Mrs. G. T. Barlow, Tiffin, Ohio.....	2d ".....	2 00

ORNAMENTAL WORK.

Owner's Name and Postoffice.	Name of Article.	Premium.
Victoria Fields, Caledonia, Ohio.....	Best specimen wax flowers.....	\$2 00
Miss Anna Miller, Quincy, Ill.	Best " bead work.....	2 00
Mrs. L. Trimble, Marion, Ohio.....	2d ".....	1 00
Mrs. C. O. Lowery, Marshfield, Ohio.....	Best " hair work.....	2 00
Mrs. M. Rinehart, Marion, Ohio.....	2d ".....	1 00
Mrs. Anna R. Alston, Columbus, Ohio.....	Best " paper flowers.....	2 00
Same.....	2d ".....	1 00
Miss Belle Lowes, Dayton, Ohio.....	Best fancy calendar.....	1 00
Miss Fannie A. Bryant, Springfield, Ohio.....	2d ".....	50
Mrs. Anna R. Alston, Columbus, Ohio.....	Best jewel box.....	1 00
Same.....	2d ".....	50
Mrs. S. G. Huss, Springfield, Ohio.....	Best blotter.....	1 00
Mrs. Trimble, Marion, Ohio.....	2d ".....	50
Mrs. Anna R. Alston, Columbus, Ohio.....	Best paper lamp shade.....	1 00
Same.....	2d ".....	50
Mrs. J. A. Zwerner, Columbus, Ohio.....	Best dressed doll.....	1 00
Miss Mary Jordan, Columbus, Ohio.....	2d ".....	50

FABRIC PAINTING.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. S. G. Huss, Springfield, Ohio.....	Best painting on silk.....	\$2 00
Mrs. W. H. Batsdorf, St. Paris, Ohio.....	2d ".....	1 00
Alice M. Hipple, Delaware, Ohio.....	Best " satin.....	2 00
Miss Fannie A. Bryant, Springfield, Ohio.....	2d ".....	1 00
Alice M. Hipple, Delaware, Ohio.....	Best " velvet.....	2 00
Mrs. W. H. Batsdorf, St. Paris, Ohio.....	2d ".....	1 00
Same.....	Best " bolting-cloth.....	2 00
Miss Fannie A. Bryant, Springfield, Ohio.....	2d ".....	1 00
Mrs. C. A. Baker, Delaware, Ohio.....	Best " wood.....	2 00
Mrs. Jas. K. Newcomer, Delaware, Ohio.....	2d ".....	1 00
Mrs. F. B. Bryan, Columbus, Ohio.....	Best " celluloid.....	2 00
Miss Fannie A. Bryant, Springfield, Ohio.....	2d ".....	1 00

WOMAN'S WORK—ART NEEDLE WORK—FOR AMATEURS—Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss Julia Gill, Columbus, Ohio.....	Best book cover.....	\$2 00.
Mrs. Chas. Higgins, Columbus, Ohio.....	2d ".....	1 00.
Miss M. Johnson, Dayton, Ohio.....	Best sideboard cover.....	2 00.
Mrs. Leon Snively, West Carrollton, Ohio.....	2d ".....	1 00.
Mrs. Chas. Higgins, Columbus, Ohio.....	Best hand screen.....	2 00.
Mrs. E. Buck, Lockland, Ohio.....	2d ".....	1 00.
Mrs. S. G. Huss, Springfield, Ohio.....	Best lamp screen.....	2 00.
Mrs. V. Murphy, Columbus, Ohio.....	2d ".....	1 00.
Mrs. Chas. Higgins, Columbus, Ohio.....	Best head rest.....	2 00.
Mrs. Leon Snively, West Carrollton, Ohio.....	2d ".....	1 00.
Mrs. V. Murphy, Columbus, Ohio.....	Best slippers.....	2 00.
Miss Eliz. Leigh, Groveport, Ohio.....	2d ".....	1 00.
Miss Julia Gill, Columbus, Ohio.....	Best shopping bag.....	2 00.
Miss M. Johnson, Dayton, Ohio.....	2d ".....	1 00.
Mrs. P. Grooms, Brecon, Ohio.....	Best wall splasher.....	2 00.
Mrs. Leon Snively, West Carrollton, Ohio.....	2d ".....	1 00.
Mrs. Chas. Higgins, Columbus, Ohio.....	Best laundry bag.....	2 00.
Mrs. Leon Snively, West Carrollton, Ohio.....	2d ".....	1 00.
Mrs. M. Buckries, Canton, Ohio.....	Best fancy tidy.....	2 00.
Mrs. Leon Snively, West Carrollton, Ohio.....	2d ".....	1 00.
Same.....	Best fancy pin cushion.....	2 00.
Kate A. Kenyon, Toledo, Ohio.....	2d ".....	1 00.
Miss L. Sheppard, Warrenton, Va.....	Best hat lining.....	2 00.
Miss V. Murphy, Columbus, Ohio.....	Best parasol.....	2 00.
Mrs. Chas. Higgins, Columbus, Ohio.....	2d ".....	1 00.
Mrs. P. Grooms, Brecon, Ohio.....	Best lady's hose.....	2 00.
Mrs. Leon Snively, West Carrollton, Ohio.....	Best ottoman.....	2 00.
Mrs. P. Grooms, Brecon, Ohio.....	2d ".....	1 00.
Mrs. C. J. McClure, Xenia, Ohio.....	Best gent's smoking jacket.....	3 00.
Lucy S. Hamilton, Washington C. H., Ohio.....	Best single specimen.....	2 00.
Mrs. J. J. Brady, Springfield, Ohio.....	2d ".....	1 00.
Miss Belle Lowes, Dayton, Ohio.....	Best display.....	10 00.
Mrs. W. L. Glover, Columbus, Ohio.....	2d ".....	5 00.

ART NEEDLE WORK—FOR PROFESSIONALS.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. Anna R. Alston, Columbus, Ohio.....	Best display.....	\$10 00
Mrs. A. Hyson, Columbus, Ohio.....	2d ".....	5 00.
Same.....	Best single specimen.....	5 00.
Mrs. Anna R. Alston, Columbus, Ohio.....	2d ".....	3 00.

CHINA PAINTING—AMATEUR LIST.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. D. C. Buck, Columbus, Ohio.....	Best chocolate set.....	\$2 00
Same.....	Best bread and milk set.....	2 00.
Miss Helen Windle, Columbus, Ohio.....	Best 6 cups and saucers.....	3 00.
Mrs. J. F. Anthony, Columbus, Ohio.....	2d ".....	2 00.
Mrs. O. L. Davis, Columbus, Ohio.....	Best 6 plates.....	3 00.
Mrs. D. C. Buck, Columbus, Ohio.....	2d ".....	2 00.
Miss Nora Prentice, Columbus, Ohio.....	Best plaque.....	2 00.
Mrs. Jas. K. Newcomer, Delaware, Ohio.....	2d ".....	1 00.
Miss Eliz. Leigh, Groveport, Ohio.....	Best bon bon box.....	2 00.
Mrs. O. L. Davis, Columbus, Ohio.....	2d ".....	1 00.

WOMAN'S WORK — CHINA PAINTING — AMATEUR LIST — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. D. C. Buck, Columbus, Ohio.....	Best specimen of figure	\$2 00
Mrs. J. K. Newcomer, Delaware, Ohio.....	2d "	1 00
Mrs. E. W. Seeds, Columbus, Ohio.....	Best specimen china painting.....	2 00
Miss Helen Windle, Columbus, Ohio.....	2d "	1 00
Miss Eliz. Leigh, Groveport, Ohio.....	Best pitcher.....	2 00
Mary E. Wiltberger, Columbus, Ohio.....	2d "	1 00
Alice M. Hipple, Delaware, Ohio.....	Best salad dish.....	2 00
Mrs. D. C. Buck, Columbus, Ohio.....	2d "	1 00
Mrs. J. F. Anthony, Columbus, Ohio.....	Best celery dish.....	2 00
Ava and Ida Main, Delaware, Ohio.....	2d "	1 00
Alice M. Hipple, Delaware, Ohio.....	Best cake plate.....	2 00
Miss Eliz. Leigh, Groveport, Ohio.....	2d "	1 00
Mrs. D. C. Buck, Columbus, Ohio.....	Best tray.....	2 00
Miss Eliz. Leigh, Groveport, Ohio.....	2d "	1 00
Mrs. E. W. Seeds, Columbus, Ohio.....	Best vase.....	2 00
Clara Blesch, Columbus, Ohio.....	2d "	1 00
Miss Nora Prentice, Columbus, Ohio.....	Best display china painting.....	5 00
Mrs. D. C. Buck, Columbus, Ohio.....	2d "	3 00
Mrs. E. W. Seeds, Columbus, Ohio.....	Best specimen Royal Worcester.....	2 00
Miss Helen Windle, Columbus, Ohio.....	2d "	1 00
Mrs. D. C. Buck, Columbus, Ohio.....	Best display Royal Worcester.....	5 00

CHINA PAINTING — PROFESSIONAL.

Owner's Name and Postoffice.	Name of Article.	Premium.
E. Anlich, Cincinnati, Ohio.....	Best specimen	\$4 00
Miss Alta Morris, Columbus, Ohio.....	2d "	2 00
Florence E. Newcomer, Delaware, Ohio.....	Best portrait.....	4 00
Mrs. F. B. Bryan, Columbus, Ohio.....	2d "	2 00
Miss Alta Morris, Columbus, Ohio.....	Best figure.....	4 00
Mrs. Anna R. Alston, Columbus, Ohio.....	2d "	2 00
E. Anlich, Cincinnati, Ohio.....	Best panel.....	3 00
Miss Alta Morris, Columbus, Ohio.....	2d "	1 00
E. Anlich, Cincinnati, Ohio.....	Best plaque.....	3 00
Mrs. F. B. Bryan, Columbus, Ohio.....	2d "	1 00
Miss Alta Morris, Columbus, Ohio.....	Best 6 cups and saucers.....	3 00
Mrs. Laura C. Davis, Columbus, Ohio.....	2d "	2 00
E. Anlich, Cincinnati, Ohio.....	Best 6 plates.....	3 00
Laura C. Davis, Columbus, Ohio.....	2d "	2 00
Mrs. F. B. Bryan, Columbus, Ohio.....	Best specimen enamel.....	2 00
Miss Alta Morris, Columbus, Ohio.....	2d "	1 00
Same	Best specimen paste.....	2 00
Mrs. Anna R. Alston Columbus, Ohio.....	2d "	1 00
Mrs. F. B. Bryan, Columbus, Ohio.....	Best specimen metal.....	2 00
Miss Alta Morris, Columbus, Ohio.....	2d "	1 00
Florence E. Newcomer, Delaware, Ohio.....	Best course set	4 00
Mrs. F. B. Bryan, Columbus, Ohio.....	2d "	2 00
Miss Alta Morris, Columbus, Ohio.....	Best display	511. Med.
Laura C. Davis, Columbus, Ohio.....	2d "	5 00

WOMAN'S WORK — PLANTS AND FLOWERS.

Owner's Name and Postoffice.	Name of Article.	Premium.
Clara Bieber, Delaware, Ohio.....	Best collection plants.....	\$ 10 00
Miss N. Charles, Columbus, Ohio.....	2d ".....	5 00
Same.....	Best collection variegated leafed plants.....	8 00
Mrs. W. R. Sprague, Brice, Ohio.....	2d ".....	4 00
Minnie Bieber, Delaware, Ohio.....	Best collection coleus.....	5 00
Mrs. E. G. Taggart, Lewis Center, Ohio.....	2d ".....	3 00
Mrs. W. R. Sprague, Brice, Ohio.....	Best collection begonias.....	8 00
Miss N. Charles, Columbus, Ohio.....	2d ".....	4 00
Mrs. E. G. Taggart, Lewis Center, Ohio.....	Best collection cannas.....	5 00
Miss N. Charles, Columbus, Ohio.....	Best collection aloes and cacti.....	5 00
Same.....	2d best specimen cactus.....	2 00
Mrs. W. F. Barr, Brice, Ohio.....	Best collection fuchsias.....	5 00
Clara Bieber, Delaware, Ohio.....	2d ".....	3 00
Mrs. W. F. Barr, Brice, Ohio.....	Best collection geraniums.....	5 00
Miss N. Charles, Columbus, Ohio.....	2d ".....	3 00
Same.....	Best collection of ferns and lycopodiums.....	5 00
Minnie Bieber, Delaware, Ohio.....	2d ".....	3 00
Same.....	Best collection of plants on trellises.....	3 00
Mrs. W. R. Sprague, Brice, Ohio.....	2d ".....	2 00
Same.....	Best 6 hanging baskets.....	5 00
Miss N. Charles, Columbus, Ohio.....	2d ".....	3 00
Jas. E. Taggart, Lewis Center, Ohio.....	Best single rustic basket.....	3 00
Miss N. Charles, Columbus, Ohio.....	2d ".....	1 00

CUT FLOWERS AND FLORAL DESIGNS.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss N. Charles, Columbus, Ohio.....	Best display floral designs.....	\$ 10 00
Same.....	Best single floral design.....	5 00
Minnie Bieber, Delaware, Ohio.....	Best collection verbenas.....	3 00
Mrs. S. O. Eggert, Massillon, Ohio.....	Best collection phloxes.....	2 00
Minnie Bieber, Delaware, Ohio.....	2d ".....	1 00
Clara Bieber, Delaware, Ohio.....	Best display asters.....	3 00
Miss N. Charles, Columbus, Ohio.....	2d ".....	2 00
Clara Bieber, Delaware, Ohio.....	Best display balsams.....	2 00
Mrs. N. D. Perry, Columbus, Ohio.....	Best display geraniums.....	2 00
Minnie Bieber, Delaware, Ohio.....	2d ".....	1 00
Miss N. Charles, Columbus, Ohio.....	Best display petunias.....	2 00
Minnie Bieber, Delaware, Ohio.....	2d ".....	1 00
Miss N. Charles, Columbus, Ohio.....	Best display gladioli.....	2 00
Mrs. E. G. Taggart, Lewis Center, Ohio.....	2d ".....	1 00
Same.....	Best display double zinnias.....	2 00
Mrs. S. O. Eggert, Massillon, Ohio.....	2d ".....	1 00
Mrs. N. D. Perry, Columbus, Ohio.....	Best display cut flowers.....	5 00
Miss N. Charles, Columbus, Ohio } divided.		
Mrs. S. O. Eggert, Massillon, Ohio.....	2d ".....	3 00
Ava and Ida Main, Delaware, Ohio.....	Best pair parlor bouquets.....	3 00
Mrs. N. D. Perry, Columbus, Ohio.....	2d ".....	2 00
Lon W. Taggart, Lewis Center, Ohio.....	Best collection native plants.....	3 00

WOMAN'S WORK — PRESERVES, PICKLES, ETC.

Owner's Name and Postoffice.	Name of Article.	Premium.
A. G. Knox, Pulaski, Pa.	Best canned tomatoes	\$2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	2d "	1 00
Mrs. A. J. Main, Delaware, Ohio	Best canned blackberries	2 00
Miss M. W. Zwerner, Marysville, Ohio	2d "	1 00
Victoria Fields, Caledonia, Ohio	Best canned raspberries	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	2d "	1 00
A. G. Knox, Pulaski, Pa.	Best canned peaches	2 00
Mrs. E. G. Taggart, Lewis Center, Ohio	2d "	1 00
Mrs. J. A. Zwerner, Columbus, Ohio	Best canned pears	2 00
Mrs. Maggie McCray, Reynoldsburg, Ohio	2d "	1 00
Mattie Armstrong, Newark, Ohio	Best canned apples	2 00
Mrs. Cruzen, Columbus, Ohio	2d "	1 00
Mrs. E. G. Taggart, Lewis Center, Ohio	Best canned quinces	2 00
A. G. Knox, Pulaski, Pa.	2d "	1 00
Mrs. E. G. Taggart, Lewis Center, Ohio	Best canned strawberries	2 00
Mrs. H. Bieber, Delaware, Ohio	2d "	1 00
Mrs. Maggie McCray, Reynoldsburg, Ohio	Best canned cherries	2 00
Mary F. Maxwell, Reynoldsburg, Ohio	2d "	1 00
Abner W. Graham, Reynoldsburg, Ohio	Best canned gooseberries	2 00
Mrs. H. Bieber, Delaware, Ohio	2d "	1 00
Mrs. Maggie McCray, Reynoldsburg, Ohio	Best canned currants	2 00
Mrs. H. Bieber, Delaware, Ohio	2d "	1 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	Best canned grapes	2 00
Mrs. G. N. Toops, Chillicothe, Ohio	2d "	1 00
Miss E. Schoen, Columbus, Ohio	Best canned plums	2 00
Victoria Fields, Caledonia, Ohio	2d "	1 00
Mrs. L. Trimble, Marion, Ohio	Best canned peas	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	2d "	1 00
Same	Best canned beans	2 00
Mrs. L. Trimble, Marion, Ohio	2d "	1 00
Mary F. Maxwell, Reynoldsburg, Ohio	Best canned rhubarb	2 00
Mrs. M. Rinehart, Marion, Ohio	2d "	1 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	Best variety canned fruit	5 00
Victoria Fields, Caledonia, Ohio	2d "	3 00
Mrs. M. Rinehart, Marion, Ohio	Best variety pickles	5 00
A. G. Knox, Pulaski, Pa.	2d "	3 00
Mary F. Maxwell, Reynoldsburg, Ohio	Best variety jellies	5 00
Mrs. L. Trimble, Marion, Ohio	2d "	3 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	Best blackberry jelly	2 00
Mrs. M. Rinehart, Marion, Ohio	2d "	1 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	Best gooseberry	2 00
Mrs. C. J. McClure, Xenia, Ohio	2d "	1 00
Mrs. H. Bieber, Delaware, Ohio	Best grape	2 00
Roe Leist, Amanda, Ohio	2d "	1 00
Mrs. Cruzen, Columbus, Ohio	Best plum	2 00
Victoria Fields, Caledonia, Ohio	2d "	1 00
Lon W. Taggart, Lewis Center, Ohio	Best raspberry	2 00
Mrs. A. J. Main, Delaware, Ohio	2d "	1 00
L. M. Gregg, Springboro, Ohio	Best strawberry	2 00
Mrs. C. J. McClure, Xenia, Ohio	2d "	1 00
L. M. Gregg, Springboro, Ohio	Best apple	2 00
Mrs. H. Bieber, Delaware, Ohio	2d "	1 00
Mrs. E. G. Taggart, Lewis Center, Ohio	Best pear	2 00
Mrs. M. Rinehart, Marion, Ohio	2d "	1 00
L. M. Gregg, Springboro, Ohio	Best crab apple	2 00
Mrs. E. G. Taggart, Lewis Center, Ohio	2d "	1 00
Mrs. H. Bieber, Delaware, Ohio	Best currant	2 00
Mrs. E. G. Taggart, Lewis Center, Ohio	2d "	1 00
Mrs. Harry Henderson, Up. Sandusky, Ohio	Best peach	2 00
Mrs. Cruzen, Columbus, Ohio	2d "	1 00
Mrs. F. Maxwell, Reynoldsburg, Ohio	Best quince	2 00
L. M. Gregg, Springboro, Ohio	2d "	1 00
Mrs. E. G. Taggart, Lewis Center, Ohio	Best preserved quinces	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	2d "	1 00
M. B. Clutter, Alexandria, Ohio	Best " pears	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	2d "	1 00
M. B. Clutter, Alexandria, Ohio	Best " apples	2 00
Mary F. Maxwell, Reynoldsburg, Ohio	2d "	1 00
Mrs. H. Bieber, Delaware, Ohio	Best " plums	2 00
Mary F. Maxwell, Reynoldsburg, Ohio	2d "	1 00
Same	Best " grapes	2 00
Mrs. M. McCray, Reynoldsburg, Ohio	2d "	1 00
A. G. Knox, Pulaski, Pa.	Best " strawberries	2 00
Mrs. Cruzen, Columbus, Ohio	2d "	1 00
A. G. Knox, Pulaski, Pa.	Best " blackberries	2 00
Mrs. A. J. Main, Delaware, Ohio	2d "	1 00
Mrs. Thos. Poole, Reynoldsburg, Ohio	Best " peaches	2 00
Abner W. Graham, Reynoldsburg, Ohio	2d "	1 00

WOMAN'S WORK — LACE AND TATTING WORK — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. O. J. Miller, Mt. Gilead, Ohio	Best point lace specimen	\$2 00
M. R. Claus, Columbus, Ohio	2d " " " "	1 00
Mrs. O. J. Miller, Mt. Gilead, Ohio	Best display point lace	8 00
Mrs. J. M. Cor, Mt. Gilead, Ohio	2d " " " "	2 00
Miss L. Sheppard, Warrenton, Va	Best tatting collar	2 00
Callie A. Fickey, Columbus, Ohio	2d " " " "	1 00
Miss Anna Miller, Quincy, Ill.	Best " " handkerchief	2 00
Madge Miller, Washington C. H., Ohio	2d " " " "	1 00
Same	Best " " specimen	2 00
Mrs. L. E. Rockwell, Quincy, Ill.	2d " " " "	1 00
Miss Anna Miller, Quincy, Ill.	Best display tatting	8 00

CROCHET WORK.

Owner's Name and Postoffice.	Name of Article.	Premium.
L. C. Leid, Columbus, Ohio	Best lace, cotton	\$2 00
Miss Anna Miller, Quincy, Ill.	2d " " " "	1 00
Miss Mattie Hall, Lexington, Ky.	Best lace, woolen	2 00
Miss Anna Miller, Quincy, Ill.	2d " " " "	1 00
Mrs. E. Buck, Lockland, Ohio	Best shawl (ice wool)	2 00
Mrs. C. J. McClure, Xenia, Ohio	2d " " " "	1 00
Same	Best infant's sacque	2 00
Miss Anna Miller, Quincy, Ill.	2d " " " "	1 00
Miss Pearl Jackson, Cedarville, Ohio	Best fascinator	1 00
Callie A. Fickey, Columbus, Ohio	2d " " " "	50
Mrs. Chas. Higgins, Columbus, Ohio	Best shoulder cape	1 00
Mrs. F. G. Needam, Atwater, Ohio	2d " " " "	50
Mrs. P. Grooms, Brecon, Ohio	Best mittens	1 00
Mrs. C. J. McClure, Xenia, Ohio	2d " " " "	50
Same	Best infant's socks	1 00
Miss Mattie Hall, Lexington, Ky.	2d " " " "	50
S. E. Jordan, Chagrin Falls, Ohio	Best collar	1 00
Miss L. Sheppard, Warrenton, Va.	2d " " " "	50
Miss Anna Miller, Quincy, Ill.	Best toilet set	1 00
Victoria Fields, Caledonia, Ohio	2d " " " "	50
Mrs. B. K. Howser, Marion, Ohio	Best table mats	1 00
Mrs. J. A. Jordan, Columbus, Ohio	2d " " " "	50
Kate A. Kenyon, Toledo, Ohio	Best slippers	1 00
Mrs. L. Trimble, Marion, Ohio	2d " " " "	50
Mrs. C. J. McClure, Xenia, Ohio	Best child's hood	1 00
Mrs. E. Buck, Lockland, Ohio	2d " " " "	50
Mrs. Anna R. Alston, Columbus, Ohio	Best purse	1 00
Same	2d " " " "	50
Miss Anna Miller, Quincy, Ill.	Best skirt	2 00
Anna Van Sant, Delaware, Ohio	2d " " " "	1 00
Mrs. Jos. Rapp, Columbus, Ohio	Best large afghan	3 00
Mrs. Anna R. Alston, Columbus, Ohio	2d " " " "	2 00
Mrs. Chas. Higgins, Columbus, Ohio	Best small afghan	2 00
Kate A. Kenyon, Toledo, Ohio	2d " " " "	1 00
Mrs. L. E. Rockwell, Quincy, Ill.	Best yoke	1 00
Mrs. C. J. McClure, Xenia, Ohio	2d " " " "	50
Same	Best display finished pieces	5 00
Miss Anna Miller, Quincy, Ill.	2d " " " "	2 00

WOMAN'S WORK — KNITTING — Continued.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. C. J. McClure, Xenia, Ohio.....	Best cotton lace.....	\$1 00
Mrs. Grayson Dye, Troy, Ohio.....	2d ".....	50
Miss Anna Miller, Quincy, Ill.....	Best woolen lace.....	1 00
Mrs. C. J. McClure, Xenia, Ohio.....	2d ".....	50

NEEDLE WORK — HAND-MADE.

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. N. D. Perry, Columbus, Ohio.....	Best pair fancy sheets.....	\$2 00
Miss L. Spencer, Xenia, Ohio.....	2d ".....	1 00
Same.....	Best " fancy pillow shams.....	2 00
Mattie Armstrong, Newark, Ohio.....	2d ".....	1 00
Mrs. L. Trimble, Marion, Ohio.....	Best " braided pillow shams.....	2 00
Mrs. H. Bieber, Delaware, Ohio.....	2d ".....	1 00
Miss L. Spencer, Xenia, Ohio.....	Best braided night dress.....	2 00
Mrs. L. Trimble, Marion, Ohio.....	2d ".....	1 00
Same.....	Best " chemise.....	2 00
Mrs. M. Rinehart, Marion, Ohio.....	2d ".....	1 00
Miss Anna Miller, Quincy, Ill.....	Best " apron.....	2 00
Miss L. Sheppard, Warrenton, Va.....	2d ".....	1 00
Miss L. Spencer, Xenia, Ohio.....	Best specimen hemstitching.....	2 00
Mrs. C. J. McClure, Xenia, Ohio.....	2d ".....	1 00
Lissa P. Warmen, Norwood, Ohio.....	Best bed spread, darned net.....	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio.....	2d ".....	1 00
Mrs. C. J. McClure, Xenia, Ohio.....	Best gent's shirt.....	2 00
Miss L. Spencer, Xenia, Ohio.....	2d ".....	1 00

MACHINE SEWING — AMATEUR.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss L. Spencer, Xenia, Ohio.....	Best suit lady's underwear.....	\$2 00
Mrs. P. Grooms, Brecon, Ohio.....	2d ".....	1 00
Mrs. C. J. McClure, Xenia, Ohio.....	Best infant's suit.....	2 00
Miss L. Spencer, Xenia, Ohio.....	2d ".....	1 00
Miss M. W. Zwerner, Marysville, Ohio.....	Best gent's shirt.....	2 00
L. P. Warmen, Norwood, Ohio.....	2d ".....	1 00
Ava and Ida Main, Delaware, Ohio.....	Best fancy apron.....	1 00
Miss Anna Miller, Quincy, Ill.....	2d ".....	50
Miss M. Johnson, Dayton, Ohio.....	Best sun bonnet.....	1 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	2d ".....	50
Same.....	Best dress for lady.....	2 00
Ava and Ida Main, Delaware, Ohio.....	2d ".....	1 00
Mrs. C. J. McClure, Xenia, Ohio.....	Best tucked night dress.....	2 00
Miss L. Spencer, Xenia, Ohio.....	2d ".....	1 00
Mrs. C. J. McClure, Xenia, Ohio.....	Best " chemise.....	2 00
Miss L. Spencer, Xenia, Ohio.....	2d ".....	1 00
L. P. Warmen, Norwood, Ohio.....	Best " shirt.....	2 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	2d ".....	1 00
Mrs. C. J. McClure, Xenia, Ohio.....	Best " pillow case.....	1 00
Same.....	Best display 3 pieces.....	3 00
Mrs. L. E. Rockwell, Quincy, Ill.....	2d ".....	2 00

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Owner's Name and Postoffice.	Name of Article.	Premium.
Mary F. Maxwell, Reynoldsburg, Ohio.....	Best preserved raspberries.....	\$2 00
E. V. Rhoades, St. Paris, Ohio.....	2d " ".....	1 00
Mrs. Thos. Poole, Reynoldsburg, Ohio.....	Best " currants.....	2 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	2d " ".....	1 00
E. V. Rhoades, St. Paris, Ohio.....	Best " gooseberries.....	2 00
Mrs. E. G. Taggart, Lewis Center, Ohio.....	2d " ".....	1 00
Mrs. Thos. Poole, Reynoldsburg, Ohio.....	Best " cranberries.....	2 00
Mrs. E. G. Taggart, Lewis Center, Ohio.....	2d " ".....	1 00
Mrs. H. Bieber, Delaware, Ohio.....	Best " melons.....	2 00
M. B. Clutter, Alexandria, Ohio.....	2d " ".....	1 00
Mrs. H. Henderson, Upper Sandusky, Ohio.....	Best tomato catsup.....	2 00
Mrs. A. J. Main, Delaware, Ohio.....	2d " ".....	1 00
M. B. Clutter, Alexandria, Ohio.....	Best cucumber catsup.....	2 00
Mrs. E. G. Taggart, Lewis Center, Ohio.....	2d " ".....	1 00
Mrs. H. Henderson, Upper Sandusky, Ohio.....	Best pickled cucumbers.....	2 00
A. G. Knox, Pulaski, Pa.....	2d " ".....	1 00
Mrs. E. G. Taggart, Lewis Center, Ohio.....	Best " peaches.....	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio.....	2d " ".....	1 00
Mrs. L. Trimble, Marion, Ohio.....	Best " tomatoes.....	2 00
Clara Bieber, Delaware, Ohio.....	2d " ".....	1 00
A. G. Knox, Pulaski, Pa.....	Best " mangoes.....	2 00
Mrs. L. Trimble, Marion, Ohio.....	2d " ".....	1 00
Mrs. E. G. Taggart, Lewis Center, Ohio.....	Best " melons.....	2 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	2d " ".....	1 00
Mrs. L. Trimble, Marion, Ohio.....	Best " onions.....	2 00
Mrs. G. V. Toops, Chillicothe, Ohio.....	2d " ".....	1 00
Mrs. Thos. Poole, Reynoldsburg, Ohio.....	Best " gherkins.....	2 00
Mrs. M. Rinehart, Marion, Ohio.....	2d " ".....	1 00
Mrs. Thos. Poole, Reynoldsburg, Ohio.....	Best " cabbage.....	2 00
Mrs. H. Bieber, Delaware, Ohio.....	2d " ".....	1 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	Best " cauliflower.....	2 00
Mrs. L. Trimble, Marion, Ohio.....	2d " ".....	1 00
Mrs. M. A. Egleson, Columbus, Ohio.....	Best chili-sauce.....	2 00
Mrs. M. Rinehart, Marion, Ohio.....	2d " ".....	1 00
Mrs. L. E. Davis, Zimmer, Ohio.....	Best chow-chow.....	2 00
Mrs. A. J. Main, Delaware, Ohio.....	2d " ".....	1 00

Owner's Name and Postoffice.	Name of Article.	Premium.
Mrs. Mary A. Egleson, Columbus, Ohio.....	Best 8 loaves yeast bread.....	\$2 00
Mrs. Sue Williams, Columbus, Ohio.....	2d " ".....	1 00
Mrs. C. C. Lazenby, Columbus, Ohio.....	Best " salt rising bread.....	2 00
Mrs. Maggie McCray, Reynoldsburg, Ohio.....	2d " ".....	1 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	Best corn bread.....	2 00
Mrs. Maggie McCray, Reynoldsburg, Ohio.....	2d " ".....	1 00
Ava and Ida Main, Delaware, Ohio.....	Best rye bread.....	2 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	2d " ".....	1 00
Clara Bieber, Delaware, Ohio.....	Best brown bread.....	2 00
Mrs. Thos. Poole, Reynoldsburg, Ohio.....	2d " ".....	1 00
M. B. Clutter, Alexandria, Ohio.....	Best graham bread.....	2 00
Mrs. L. E. Davis, Zimmer, Ohio.....	2d " ".....	1 00
Ava and Ida Main, Delaware, Ohio.....	Best sponge cake.....	2 00
Clara Bieber, Delaware, Ohio.....	2d " ".....	1 00
Mrs. Maggie McCray, Reynoldsburg, Ohio.....	Best raised biscuit.....	2 00
Mary F. Maxwell, Reynoldsburg, Ohio.....	2d " ".....	1 00

FINE ARTS.

DRAWINGS, PAINTINGS, ETC. — PROFESSIONAL.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss K. E. Irwin, Columbus, Ohio	Best life-size portrait in oil, from sittings ..	\$ 10 00
Same	" " " " copy	10 00
Herman Baker, Columbus, Ohio	" portrait in oil of horse, bull or cow	10 00
Christ Schumacher, Springfield, Ohio	" specimen animal painting in oil, original	5 00
Miss Kate Kauffman, Springfield, Ohio	" landscape from nature, in oil	5 00
H. C. Cornell, Reynoldsburg, Ohio	" specimen fruit flower or object painting, in oil	5 00
Retta Matthews, Arlington, Ind.	" figure piece, in oil	5 00
Herman Baker, Columbus, Ohio	" exhibition paintings	20 00
Anna Van Sant, Delaware, Ohio	" life-size portrait, in water colors	10 00
Josephine Klippart, Columbus, Ohio	" landscape from nature, water colors	10 00
Mrs. P. B. Bryan, Columbus, Ohio	" specimen fruit, flower, or object painting, in water colors, original	5 00
H. C. Cornell, Reynoldsburg, Ohio	" exhibition paintings	15 00
L. P. Breining, Columbus, Ohio	" free-hand crayon	5 00
Thos. K. Lewis, Columbus, Ohio	" portrait in free-hand	5 00

OIL PAINTINGS — AMATEUR.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss Fannie A. Bryant, Springfield, Ohio....	Best portrait in oil, copy	\$ 5 00
Mrs. C. A. Baker, Delaware, Ohio	" specimen in oil, copy	3 00
Miss Belle Havens, Newark, Ohio	" landscape from nature	5 00
Miss Lonella Eagan, Springfield, Ohio	" " " " copy	3 00
Miss Fannie A. Bryant, Springfield, Ohio	" figure, original	3 00
Mrs. M. O. Pond, Columbus, Ohio	" fruit, flower or object, original	5 00
Alice M. Hipple, Delaware, Ohio	" " " " from copy	3 00
Miss Fannie A. Bryant, Springfield, Ohio....	" three-panel screen	5 00
Miss Belle Havens, Newark, Ohio	" landscape in oil, on satin	3 00
Alice Schille, Columbus, Ohio	" exhibition paintings	10 00

WATER COLORS — AMATEUR.

Owner's Name and Postoffice.	Name of Article.	Premium.
Harriet A. Zeigler, Columbus, Ohio	Best portrait from photo	\$ 5 00
Miss C. Van Sant, Delaware, Ohio	" figure piece, copy	5 00
Clara Blesch, Columbus, Ohio	" landscape from nature	5 00
Harriet A. Zeigler, Columbus, Ohio	" " " " copy	3 00
Alice Schille, Columbus, Ohio	" fruit or flower painting from nature	5 00
Miss C. Van Sant, Delaware, Ohio	" " " " " copy	3 00
Harriet A. Zeigler, Columbus, Ohio	" still life, original	5 00
Alice Schille, Columbus, Ohio	" exhibition paintings	10 00

DRAWING — AMATEUR.

Owner's Name and Postoffice.	Name of Article.	Premium.
Lon W. Taggart, Lewis Center, Ohio.	Best shaded charcoal drawing from object ..	\$ 3 00
Mrs. Alice Baker, Columbus, Ohio.	" " stump drawing.	3 00
Miss Belle Havens, Newark, Ohio.	" " brush drawing.	3 00
F. L. Wright, West Jefferson, Ohio.	" free-hand pen drawing.	3 00
Mrs. C. A. Baker, Delaware, Ohio.	" sketch of landscape from nature.	3 00
Mrs. A. Baker, Columbus, Ohio.	" display of drawings.	5 00

PASTEL DRAWING.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss Fannie A. Bryant, Springfield, Ohio.	Best landscape, nature.	\$ 5 00
Grace Ingham, Quincy, MI.	" figure piece, original.	5 00
Mrs. J. K. Newcomer, Delaware, Ohio.	" still life, original.	3 00
Mrs. F. B. Bryan, Columbus, Ohio.	" fruit or flower drawing.	3 00
Miss Lonella Eagan, Springfield, Ohio.	" drawing of animal or game, original.	3 00
L. P. Breining, Columbus, Ohio.	" portrait, copy.	5 00

MECHANICAL DRAWING.

Owner's Name and Postoffice.	Name of Article.	Premium.
Irving Longenecker, Dayton, Ohio.	Best orthographic projection.	\$ 5 00
Jas. E. Taggart, Lewis Center, Ohio.	" isometric projection.	5 00
Same.	" mechanical perspective.	3 00
Irving Longenecker, Dayton, Ohio.	" machine drawing.	3 00
Jas. E. Taggart, Lewis Center, Ohio.	" architectural drawing.	5 00

PHOTOGRAPHS AND MISCELLANEOUS.

Owner's Name and Postoffice.	Name of Article.	Premium.
Jas. E. Taggart, Lewis Centre, Ohio.	Best architectural drawings.	Sil. Med.

PREMIUM AWARDS.

SCULPTURE.

Owner's Name and Postoffice.	Name of Article.	Premium.
Miss Kate Kauffman, Springfield, Ohio.....	Best display wood carving.....	\$10 00
Mrs. C. A. Baker, Delaware, Ohio.....	2d ".....	5 00
H. M. Young, Columbus, Ohio.....	Best panel hammered brass.....	2 00
Same.....	" frame ".....	2 00
Same.....	" specimen ".....	4 00
Same.....	" display repousse work.....	5 00

SCULPTURING OR MODELING.

Owner's Name and Postoffice.	Name of Article.	Premium.
Retta Matthews, Arlington, Ind.....	Best bust or figure from life.....	Sil. Med.
Alice Schille, Columbus, Ohio.....	" bas-relief from life.....	Sil. Med.
Minnie Haufe, Columbus, Ohio.....	" general work from city schools.....	Sil. Med.

NON-PREMIUM DEPARTMENTS.

In the departments of machinery and agricultural implements, mechanics' and manufacturers' products, music and merchandise, no premiums were offered. The exhibits were numerous, the departments being completely filled with a class of worthy articles and displays that elicited much commendable praise.

Following is a list of exhibitors:

AGRICULTURAL IMPLEMENTS, MACHINERY, ETC.

American Road Machine Co., Delaware, O. . . .	Champion rock crusher, Champion grader, wheel scrapers, drag scrapers, road plows.
American Manufacturing Co., Waynesboro, Pa.	Fruit evaporator.
American Harrow Co., Detroit, Mich	Harrows.
Advance Threshing Machine Co., Battle Creek, Mich.	Threshing machinery.
American Sickle and Tool Co., Chicago, Ill. . . .	Tool grinder.
Akron Cultivator Co., Akron, O.	Cultivators.
Ashland Manufacturing Co., Ashland, O.	A full line of iron pumps.
Aultman, Taylor & Co., Mansfield, O	Engine and clover huller.
Avery Planter Co., Peoria, Ill	Corn King planter, combined drill and checkrower, Corn Queen planter, combined checkrower, combined riding and walking cultivator, A. J. K. walking cultivator, spring tooth, tongueless cultivator, eagle claw, tongueless cultivator, Avery easy cultivator, Avery thresher and separator, Avery traction engine, Automatic stacker, Automatic feeder, weigher.
Avery Stamping Co., Cleveland, O.	Steel fence posts.
Barlow Planter Co., Quincy, Ill.	Corn planters.
Birdsell Manufacturing Co., South Bend, Ind. .	Clover hullers, Birdsell wagons.
Banner Buggy Co., Columbus, O	Vehicles.
Bateman Manufacturing Co., Grenloch, N. J. . .	Imperial Robbins potato planter with fertilizer attached, Imperial Robbins potato planter without fertilizer attached, Iron Age riding cultivator as a fixed wheel, Iron Age riding cultivator as a pivot wheel, Iron Age five tooth cultivator with various attachments, single wheel Gem garden cultivator, double.

- Bateman Manufacturing Co.—Concluded wheel Gem garden cultivator, single wheel Juvil garden cultivator, double wheel Juvil garden cultivator, Advance fertilizer drill, New Model seed drill.
- Blue Beauty Gate Co., Elizabeth, Ky. Gates.
- Bowen Bros., Norwalk, O. Fencing.
- Brown Manufacturing Co., Zanesville, O. . . . Wagons, cultivators, harrows, five tooth cultivator, double shovel plow, single shovel plows.
- Brown-Manley Plow Co., Malta, O. Walking and riding cultivators, steel and wood frame harrows, genuine Malta shovel plows and a full line of finished steel.
- Bucher-Gibbs Co., Canton, O. A full line of farm implements.
- Buchanan Fence Co., Smithville, O. Fencing.
- Carter Wire Fence Mfg. Co., Mt. Sterling, O. . . Fence machine, fence loom, fencing.
- Clipper Plow Co., Defiance, O. Riding cultivator, steel beam plow, wood beam plow.
- Cleveland Dryer Co., Cleveland, O. Fertilizers.
- Collins Plow Co., Quincy, Ill. Hay presses.
- Common Sense Engine Co., Muncie, Ind. . . . Common Sense engine.
- Cincinnati Desiccating Co., Cincinnati, O. . . Fertilizers.
- Champion Wagon Co., Owego, N. Y. Farm wagons, grain drill.
- Chase Pump Co., Columbus, O. Force pump, Scotch pump, spray pump, three-way pump, general purpose pump.
- Chicago Scale Co., Chicago, Ill. Scales.
- Columbus Carriage Mfg. Co., Columbus, O. . . Vehicles.
- Cyclone Wire Fence Co., Holly, Mich. Fencing.
- Choate Implement Co., Columbus, O. Traction engine, separator with wind stackers and self-feeder, Telescope grain weigher.
- Columbus Churn Co., Columbus, O. Churn and washing machines.
- Columbus Street Lamp and Novelty Co., Columbus, O. Foot warmer.
- Columbian Fence Machine Co., Richmond, Ind. . Columbian fence machine, style A and style B, Little Giant fence machines.
- Capital City Machine Works, Columbus, O. . . General machinery and supplies.
- Crippen Bros., Athens, O. Car mover.
- Champion Manufacturing Co., Richmond, Ind. . Plows, double shovel plows, riding cultivators, lawn mowers.
- Deer & Mansur Co., Moline, Ill. Corn planter, combined corn planter, corn drill, disc harrow, hay rakes, disc cultivator, disc cultivator combined, one horse drill, combined fertilizer drill.
- Devere Bros., Columbus, O. Wire and iron works.
- Ellis & Helfenberger, Indianapolis, Ind. . . . Farm fence, lawn fence.
- Elliott & Reed Co., Richmond, Ind. Fencing.
- Economy Heating Co., Cannonsburg, Pa. . . . Radiators.
- Erwin Hydraulic Machine Co., Milwaukee, Wis. . Hydraulic machinery.
- Eureka Wind Mill Co., Kalamazoo, Mich. . . . Wind mills.

- Eureka Wire Fence Co., Richmond, Ind. Wire fence.
- Eureka Mower Co., Utica, N. Y. Mowers.
- E. A. Casper, Peoria, Ill. Automatic gate.
- Evans Manufacturing Co., Springfield, O. Corn drill and planter, one horse drill, steel harrow, wood triple harrow, potato planter.
- Famous Manufacturing Co., Chicago, Ill. Belt press, two horse hay press.
- Flint & Walling Mfg. Co., Kendallville, Ind. 8 foot galvanized steel Star mill, 12 foot power mill, 12 foot irrigating mill, 12 foot wood mill, 10 foot steel mill, tanks, pumps of various kinds, cylinders of various kinds.
- Fairbank Frame Erector Co., Helena, O. Frame erector.
- Fate-Gunsulus Co., Plymouth, O. Brick and tile machine, Automatic brick table, Automatic tile table.
- Fleming Manufacturing Co., Ft. Wayne, Ind. Road machines.
- Foos Manufacturing Co., Springfield, O. Feed mills, horse powers, corn shellers, corn harvesters, corn planters, blacksmith tools.
- William Ferris, Norwood, O. Cistern cleaner.
- Gaar, Scott & Co., Richmond, Ind. Engines, separator with feeder and Uncle Tom stacker, clover huller with feeder and Uncle Tom stacker, clover huller.
- Grimm Manufacturing Co., Hudson, O. Champion evaporator.
- Gale Manufacturing Co., Albion, Mich. Full line of plows.
- Galion Buggy Co., Galion, O. Buggies.
- Greenville Implement Co., Greenville, Mich. A full line of farm implements.
- Geyser Manufacturing Co., Waynesboro, Pa. Engine and thresher.
- W. B. George, Columbus, O. Car fender.
- Hayworth & Son, Decatur, Ill. Planting machine, corn planters, checkrowers and fertilizers.
- Hindlong & Downs, Columbus, O. Farm machinery.
- Hayes Pump and Planter Co., Galva, Ill. Hayes 4 wheel corn planter, Junior planter, Rex planter, Eclipse combined leader cultivator, Pendulum beam cultivator, Ozark King cultivator, Hayes perfect balance, Hayes pumps, Boss and New Boss shoveling boards, Dack hot water boiler.
- Hoosier Drill Co., Richmond, Ind. Fertilizer 8 hoe grain drill, 8 hoe grain drill, plain 8 hoe grain drill, 5 hoe fertilizer grain drill, 5 hoe plain grain drill, corn planter, 2 horse corn drill, 1 horse fertilizer corn drill, 1 horse plain corn drill, sulky hay rake.
- Hartman Manufacturing Co., Vincennes, Ind. Cultivators.
- Huber Manufacturing Co., Marion, O. 8-12-16 horse power locomotives, separators, Huber self-feeder, Huber grain weigher, Huber wind stacker, Huber swing stacker, wagon loader.
- Homer Steel Fence Co., Homer, Mich. Fencing.

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- Moore & Dunn, Columbus, O. Stoves, cultivators, rakes, binders, mowers, corn harvesters, drills.
 M. C. Baughman Co., York, Pa. Washing machine.
 Newark Machine Co., Newark, O. Clover huller and self-feeder, straw stacker, fanning mills.
 Neer Bros., Mechanicsburg, O. Fence and snaps.
 Nelson & Morris, Chicago, Ill. Fertilizers.
 Newton Wagon Co., Batavia, Ill. Farm wagons, garden wagons.
 Nichols & Shepard Co., Battle Creek, Mich. Traction engine, separator.
 • Ohlen & Sons, Columbus, O. Circular saws, band saws, emery wheels.
 • Ohio Farmer Fertilizer Co., Columbus, O. Fertilizers.
 • Ohio Cultivator Co., Bellevue, O. 6 shovel sulky cultivator, spring tooth sulky cultivator, 6 shovel walking cultivator, spring tooth walking cultivator, steel lever harrow.
 • Ohio Rake Co., Dayton, O. Bell Center Cutaway harrow, Dandy disc harrow, Cutaway disc harrow, U. bar steel lever harrow, Quail steel rake, Gazette rake, Ohio Rake Co. hay tedder, Quail tedder, Ohio hay loader, corn sheller, sample school desk, recitation seat.
 • Oliver Chilled Plow Co., Hamilton, O. Breaking plows, sulky plows.
 O. K. Sulkey Plow Co., Hamilton, O. Patent plows.
 • Overman Wheel Co., Columbus, O. Bicycles.
 Patent Toe Calk Co., Waynesville, O. Patent toe calk.
 Platt & Co., Columbus, O. Wagons.
 Perfect Washing Machine Co., Columbus, O. Washing machines.
 Potts Machine Co., Columbus, O. Pumps.
 P. P. Mast & Co., Springfield, O. Grain drills, potato planter, cider mills, walking cultivators, riding cultivators, riding disc cultivators, hay rake.
 Pittsburg Provision Co., Pittsburg, Pa. Fertilizers.
 Polar Creamery Co., Lafayette, Ind. Creamers.
 Princess Plow Co., Canton, O. Plows.
 Reves & Morris, Fordyce, Pa. Champion hay rack.
 Rumley & Co., La Porte, Ind. Threshing rig.
 Roderick Lean Mfg. Co., Mansfield, O. 3 section steel lever harrow, 2 section steel lever harrow, 3 section diamond frame harrow, Globe disc harrow.
 Reeves & Co., Columbus, Ind. Grain separators, clover hullers, traction engines, Reeves' automatic stacker, clover huller and feeder, netting huller blower, netting separator blower, automatic weigher.
 Ross Cutter Co., Springfield, O. Corn huskers.
 Russell Manufacturing Co., Mansfield, O. 16 horse power engine, 33x50 cyclone separator, pneumatic stacker, water tank.
 Racine Wagon and Carriage Co., Racine, Wis. Buggies, phaeton, road wagon.

- Rock Plaster Manufacturing Co., Columbus, O. Patent plaster.
 Shuart Land Grader Co., Oberlin, O. Land grader.
 South Bend Chilled Plow Co., South Bend, Ind. Steel plows, chilled plows, 1 horse
 plows, hillside plows, combination
 plows, Garland sulky plows, New
 Casaday sulky plows, 2 horse cul-
 tivator, 1 horse cultivator and
 double shovel.
- Sheidler Machine Co., Newark, O. Engines.
 Starr Manufacturing Co., New Lexington, O. Feed mills.
 Speakman Fence Co., New Castle, Ind. Fencing.
 Strobel Manufacturing Co., Marion, O. Washing machines.
 Springfield Fertilizer Co., Springfield, O. Fertilizers.
 Spellacy & Kauffman, Columbus, O. Self-dumping wagon.
 Troy Wagon Works, Troy, O. 1 horse farm wagon, 2 horse farm
 wagon, pivot axle wagon.
- The Chambers-Bering-Quinlan Co., Decatur, Ill. Hay loader, hay rake, corn planter.
 The Dayton Gas Engine Co., Dayton, O. Gas engine.
 The Z. Breed Weeder Co., Boston, Mass. Weeders, cultivators, onion and veg-
 table weeders.
- The Potato and Imp. Co., Traverse City, Mich. Acme hand potato planters, Hill's
 Knapsack sprinklers, Acme plas-
 ter sifters.
- The Aultman Co., Canton, O. Engine, separator, automatic stack-
 er, tank.
- The Selby, Starr Co., Peoria, Ill. Grain weigher.
 The Superior Drill Co., Springfield, O. 8 hoe fertilizer drill, 8 hoe plain
 drill, 8 hoe disc plain drill, 5 hoe
 disc plain drill, 4 shovel cultivator,
 6 shovel cultivator, hay rake, hay
 tedder.
- The Thomas Manufacturing Co., Springfield, O. Rakes, tedders, lawn mowers, pumps,
 disc harrows, hay loaders, portable
 elevator.
- The Stoddard Manufacturing Co., Dayton, O. Corn planters, disc harrows, hay
 rakes, hay tedders, hay loaders,
 metal wagon wheels, lawn swings.
- The Syracuse Chilled Plow Co., Syracuse, N.Y. Steel plows, chilled plows, 1 horse
 plows, hillside plows, cultivators
 spring tooth harrows.
- The De Laval Cream Separator, Worthington, O. Cream separator.
 The S. B. Sutton Co., North Baltimore, O. Columbian sash balance.
 The Standard Cabinet Co., Kansas City, Mo. Kitchen cabinet.
 The Indiana Machine Works, Ft. Wayne, Ind. Road machine.
 The J. R. Underwood Co., Columbus, O. Washing machines.
 The Mitchell Machine Co., Kendallville, Ind. Food bailers.
 The Marquis & Frazell Co., Dayton, O. Corn tie and fodder stand.
 The Buffalo Pitts Co., Buffalo, N. Y. Land roller, hay rake, disc harrow-
 spike tooth harrow, spring tooth
 harrow.
- The Cutaway Harrow Co. Revolving plow, cutaway disc har-
 row, cutaway disc harrow and
 seeder.

The H. P. Deuscher Co., Hamilton, O.	Hamilton planter, combination planter, disc, spading disc, soil pulverizer, steel lever harrow, folding harrow, fence machine, churn.
The Union Iron Works, Troy, O.	Engines.
The Johnson Harvester Co., Batavia, N. Y.	Binders, mowers.
The J. F. Seiberling Co., Akron, O.	Mowers, reapers.
The Bess Machine Co., Hamilton, O.	Plow sulky attachment.
The James Plewhharp Co., Columbus, O.	Barrel trucks, box trucks, trucks.
The Phillis Fence Co., Springfield, O.	Fencing.
The Page Woven Wire Fence Co., Tecumseh, Mich.	Fencing, etc.
The Perkins Wind-Mill Co., Mishawaka, Ind. .	Wind-mill.
The Hullinger Fence Co., Greenville, O.	Fencing.
The Crescent Metallic Fence Stay Co., Covington, O.	Fencing.
The Revolving Sand Screen Co., Bloomington, Ill.	Revolving sand screen.
The H. B. Mame Co., Dayton, O.	Watering trough.
The B. F. Avery Co., Louisville, Ky.	Rolling plow coultter.
The H. L. Bennett Co., Westerville, O.	Stump pullers.
The J. Combs Co., Rushville, O.	Fence machine.
The Hench & Dromgold Co., York, Pa.	Force feed fertilizer drill.
The D. S. Armstutz Co., Orrville, O.	Water heater.
The I. C. Cremer Co., Columbus, O.	Fencing.
The J. L. Bienz Co., Peoria, Ill.	Grain weighers.
Victor Washer Co., Utica, N. Y.	Washing machines.
Wayne Agricultural Works, Richmond, Ind. .	Grain drills, corn planters, corn drills, cutting boxes, spring wagons, buggies, carts.
Wilson Stock Fountain Co., Chicago, Ill. . . .	Stock fountain.
J. F. Wright, Columbus, O.	Cream separator.
Wiard Plow Co., Batavia, N. Y.	Morgan spreading harrow, plows, rake, adjustable weeder.
W. R. White, Bloomington, Ill.	Drive gate.
Western Union Chemical Co., Cleveland, O. .	Fertilizers.
Wilson & Whiteley Machine Co., Springfield, O.	Binder, mower, hay tedder, engine and tank, and a full display of malleable castings.
Weber Wagon Co., Chicago, Ill.	Farm wagons.

MERCHANTS' AND MANUFACTURERS' PRODUCTS.

W. S. Truax, Cincinnati, O.	Wire horse brush.
Wm. Meeker, Washington C. H., O.	Ball bearing wheels.
W. I. Miller, Columbus, O.	Crystal washing machines.
C. F. Allen, Columbus, O.	Patent natural and artificial gas appliances.
H. C. Wilson, Springfield, O.	Patent kettle cleaner.
A. W. Neer, Mechanicsburg, O.	Patent automatic snap and holder.
C. O. Taylor, Urbana, O.	Patent fly exhibit.
E. B. Armstrong, Columbus, O.	Furnaces.
W. P. Tracy, Columbus, O.	Club Cycle Co.
Schoedinger, Fearn & Co., Columbus, O.	Moore's light and hot air stoves.

D. D. Dun, agent, Columbus, O.	The Vermont farm machinery.
Geo. R. Moon, Columbus, O.	Patent heating ovens for gas stoves.
The Columbus Brass & Closet Co., Columbus, O.	Brass work.
T. J. Hanson, Columbus, O.	The Jas. Ohlens saws, etc.
J. R. Little, Springfield, O.	The Battendorf metal wheel.
E. L. Bascom	Microscopes, fancy work.
Hal V. Rhodes, Columbus, O.	Shell, sail boat, etc.
Bradley, Munk & Co., Columbus, O.	Stoves and household furniture.
W. Elliott, Marion, O.	Delivery wagons.
J. H. & F. Sells, Columbus, O.	Harness, saddles, etc.
John Immel & Son, Columbus, O.	Fine delivery wagons, buggies, phaetons and coach.
John M. Parsons, Columbus, O.	Metripoles, traps, etc.
The Buckeye Buggy Co., Columbus, O.	Phaetons, surries, buggies, traps and tally-ho.
D. C. Jones, Agent, Indianapolis, Ind.	Surries, buggies and phaetons.
D. Gill, Agent, Charlotte, Mich.	Surries, buggies, phaetons and cutters.
The U. S. Carriage Co., Columbus, O.	Hearses, funeral coaches, cabs and spiders.
The Columbus Buggy Co., Columbus, O.	Fine carriages, phaetons, surries buggies, etc.
The Scioto Buggy Co., Columbus, O.	Buggies, surries, phaetons, etc.
The Overman Wheel Co., Chicopee Falls, Mass.	Bicycles and furnishings.
The A. H. Sturtevant Vehicle Co., Indianapolis, Ind.	Buggies, surries, etc.
Curtis & Reed, Piqua, O.	Buggies, surries and phaetons.
The Piqua Wagon Co., Piqua, O.	" " " "
The Central Ohio Buggy Co., Galion, O.	" " " "
The Galion Buggy Co., Galion, O.	" " " "
Spencer Garwood, Milford Center, O.	Roller bearing axle buggy.

MERCHANDISE, MUSIC, ETC.

W. S. Carlisle & Son, Columbus, O.	Furniture, carpets and curtains.
C. R. Parrish & Co., Columbus, O.	" " " "
McAllister, Mohler & Co., Columbus, O.	Furniture.
S. H. Kerins & Co., Columbus, O.	Pictures, picture frames, books, etc.
L. J. Miller, Columbus, O.	Toys and notions.
D. H. Baldwin & Co., Columbus, O.	Pianos and organs.
Hockett Bros.-Puntenny Co., Columbus, O.	" " "
Longstreth & Schroeder, Columbus, O.	" " "
Yardley & Harsh, Columbus, O.	Willow-ware, bicycles and toys.
J. C. Porterfield, Columbus, O.	Guns and sportsmen's supplies.
F. W. Ritter, Toledo, O.	Pottery goods.
C. D. Ruggles, Niagara Falls, N. Y.	Wire jewelry and spar jewelry.
F. W. Tranley, Chicago, Ill.	Jewelry.
F. A. Stallman, Columbus, O.	Trunks and valises.
S. Mogab, Chicago, Ill.	Japanese and Turkish goods.
Hoffman Supply Co., Columbus, O.	Jewelers' supplies.
I. Schwartz, Columbus, O.	Spectacles.
Urlin & Pfeiffer, Columbus, O.	Photographers.
Sam Elliott, Columbus, O.	Elliott's bakery.
W. F. Sauer, Agent, Columbus, O.	Malt coffee.

W. H. B. Williams, Agent, Columbus, O.	Disinfectant (Chlors - Naphtholeum).
G. B. Corill, Philadelphia, Pa.	Potato knife.
E. H. Sells, Agent, Columbus, O.	Cash register.
F. C. Persons, Agent, Columbus, O.	Typewriter (Williams).
J. I. Goldsmith, Columbus, O.	Embroidery machine.
I. Goldsmith, Columbus, O.	Wire jewelry.
F. H. Darby, Superintendent, Columbus, O.	Children's Home Society of Ohio.
Aluminum Sign Co., Columbus, O.	Aluminum signs and letters.
Ohio State University, Columbus, O.	Information bureau.
Kirby & Co., Columbus, O.	Toys and notions.
R. P. Cullen, New Albany, Ind.	Jewelry and spectacles.
C. Gerlach, Columbus, O.	Jewelry and engraving.
M. W. Westlake, Columbus, O.	Glass engraving.
C. E. Roth, Columbus, O.	Florist, bulbs and designs.

ABSTRACTS FROM REPORTS OF COUNTY AGRICULTURAL SOCIETIES FOR 1895.

TABLE I—COUNTY FAIRS IN OHIO FOR 1895.

County.	President.	Post-office.	Treasurer.	Post-office.
Adams.....	W. K. Coleman.....	West Union.....	Henry Scott.....	West Union.
Allen.....	H. C. Adgate.....	Lima.....	S. D. Crites.....	Elida.
Ashland.....	R. J. Simanton.....	Ashland.....	J. Cahn.....	Ashland.
Ashtabula.....	G. S. Harvey.....	Rock Creek.....	B. W. Baldwin.....	Jefferson.
Athens.....	S. F. Wolfe.....	Athens.....	W. F. Scott.....	Athens.
Auglaize.....	J. T. Van Horn.....	New Hampshire.....	Frank Rigdon.....	Wapakoneta.
Belmont.....	John Sidebottom.....	St. Clairsville.....	E. G. Amos.....	St. Clairsville.
Brown.....	V. K. Thompson.....	Georgetown.....	Ben B. Whiteman.....	Georgetown.
Butler.....	Sam. K. Hughes.....	Le Sourdsville.....	Frank W. Whitaker.....	Hamilton.
Carroll.....	David Blazer.....	Carrollton.....	T. J. Saltsman.....	Carrollton.
Champaign.....	C. H. Ganson.....	Urbana.....	H. P. Wilson.....	Urbana.
Clark.....	C. Stewart.....	Springfield.....	J. H. Garlough.....	Pitchin.
Clermont.....	S. B. Myers.....	Goshen.....	Charles Stark.....	Batavia.
Columbiana.....	J. F. McQueen.....	Inverness.....	B. N. Brown.....	Gavers.
Crawford.....	W. S. Miller.....	Coshocton.....	Jos. L. Rue.....	Coshocton.
Cuyahoga.....	J. H. Keller.....	Sulphur Springs.....	M. J. Monnette.....	Bucyrus.
Cuyahoga, West.....	J. P. Thorp.....	Warrensville.....	H. V. Bigalow.....	Chagrin Falls.
Darke.....	J. E. Asling.....	Bequa.....	W. J. Poots.....	Strongsville.
Delaware.....	J. M. Brown.....	De Lisle.....	F. M. Eidson.....	Greenville.
Erie.....	James Cockrell.....	Alum Creek.....	Fred. T. Jones.....	Delaware.
Fairfield.....	S. C. Prout.....	Prout.....	C. B. Wilcox.....	Sandusky.
Fayette.....	Jacob Claypool.....	Hookers.....	A. I. Vorys.....	Lancaster.
Fulton.....	L. C. Mallow.....	Washington C. H.....	F. G. Carpenter.....	Washington C. H.
Geauga.....	L. G. Ely.....	Fayette.....	J. W. Howard.....	Winameg.
Greene.....	W. Ballard.....	Hamden.....	H. C. Tuttle.....	Burton.
Guernsey.....	John B. Lucas.....	Xenia.....	T. L. Magruder.....	Xenia.
	Dr. G. H. Stout.....	Middlebourne.....	R. S. Frame.....	Washington.

Hamilton	B. P. Cutchell	Carthage	N. S. Baxtor	Pleasant Ridge.
Hancock	M. C. Greer	Mt. Blanchard	W. F. Stosler	Findlay.
Hardin	A. Letson	Kenton	F. H. Rummell	Kenton.
Harrison	S. C. Dickerson	Cadiz	W. S. Cessna	Cadiz.
Henry	H. C. Grasnher	Napoleon	R. B. Heller	Napoleon.
Highland	S. P. Scott	Hillsboro	H. L. Wiggins	Hillsboro.
Hocking	John F. White	Logan .....	.....	.....
Holmes	A. Wolgamot	Millersburg	C. D. Parkinson	Millersburg.
Huron	C. W. Anderson	Norwalk	C. A. Paul	Norwalk.
Jefferson	A. L. Sutherland	Smithfield	Chas. McKinney	Smithfield.
Lawrence	M. L. Whitley .....	.....	C. J. Reynolds	Proctorville.
Licking	G. W. Horton	Newark	W. C. Miller	Newark.
Logan	Geo. A. Henry	Bellefontaine	S. E. Allmon	Bellefontaine.
Lorain	J. L. Reed	Fields	J. E. Willard	Elyria.
Madison	Chas. A. Wilson	Lafayette	Jos. M. Lewis	London.
Mahoning	B. P. Baldwin	Tiger	H. A. Manchester	Canfield.
Marion	B. P. Hord	Marion	S. N. Titus	Marion.
Medina	F. A. Branch	Medina	A. T. Spitzer	Medina.
Mercer	S. H. Weaver	Early	J. M. Winter	Celina.
Miami	T. S. Scott	Troy	John A. McCurdy	Troy.
Monroe	W. C. Mooney	Woodsfield	W. C. Mooney	Woodsfield.
Morgan	John G. Walker	McConnellsville	J. W. McElhiney	McConnellsville.
Morrow	W. O. Thuma	Shauck	J. M. Moody	Mt. Gilead.
Muskingum	S. A. Baldwin	Zanesville	Jas. E. Tanner	Zanesville.
Noble	W. S. Spriggs	Sarahsville	C. L. Hellyer	Sarahsville.
Ottawa	Wm. A. Wonnell	Port Clinton	Edward Wedekind	Port Clinton.
Paulding	J. L. Slager	Paulding	Floyd Atwill	Paulding.
Perry	B. B. Weight	New Lexington	Frank E. Fox	New Lexington.
Portage	C. C. Gardner	Freedom	C. H. Laubert	Ravenna.
Preble	F. M. Davison	West Manchester	C. F. Brook, jr	Eaton.
Putnam	A. L. Paul	Ottawa	C. H. Rice	Ottawa.
Richland	Jerry Needham	Lexington	M. D. Ward	Mansfield.
Ross	C. W. Story	Chillicothe	Theo. Spetnagel	Chillicothe.
Sandusky	H. C. Smith	Fremont	John Sherman	Fremont.
Scioto	Theo. Doty	Portsmouth	Floyd L. Smith	Portsmouth.
Shelby	H. Guthrie	Sidney	O. J. Taylor	Sidney.
Stark	S. A. Conrad	Massillon	Henry A. Wise	Canon.
Summit	J. W. Kreighbaum	Lake	Geo. W. Brewster	Akron.
Trumbull	Albert Brown	Warren	Robt. T. Izant	Warren.
Tuscarawas	U. C. Deardorf	Canal Dover	Chas. H. Wentz	Canal Dover.

TABLE I—COUNTY FAIRS IN OHIO FOR 1895—CONTINUED.

County.	President.	Post-office.	Treasurer.	Post-office.
Union	C. S. Chapman	Marysville	J. J. Watts	Broadway.
Van Wert	J. S. Stuckey	Van Wert	E. B. Gilliland	Van Wert.
Vinton	D. Will	McArthur	J. W. Darby	McArthur.
Warren	Huse Bone	Lebanon	F. M. Cunningham	Lebanon.
Washington	F. G. Best	Marietta	J. H. McConnell	Marietta.
Wayne	Wm. Armstrong	Golden Corners	W. A. Wilson	Wooster.
Wood	Frank Powell	Perrysburg	E. B. Beverstock	Tontogany.
Wyandot	Dr. G. W. Cliffe	Upper Sandusky	C. D. Hare	Upper Sandusky.

COUNTY FAIRS IN OHIO FOR 1895, WITH TIME AND PLACE.

County.	Secretary.	Post-office.	Time of Fair.	Place of Fair.
Adams	T. W. Ellison	West Union	Sept. 10, 11, 12 and 13	West Union.
Allen	Miner A. Atmur	Lima	Sept. 3, 4, 5 and 6	Lima.
Ashland	A. W. Fritzinger	Ashland	Sept. 3, 4, 5 and 6	Ashland.
Ashtabula	B. F. Perry, jr.	Jefferson	Sept. 24, 25, 26 and 27	Jefferson.
Athens	S. N. Hobson	Athens	Aug. 20, 21 and 22	Athens.
Auglaize	M. J. Crawford	Wapakoneta	Oct. 8, 9, 10 and 11	Wapakoneta.
Belmont	T. C. Ayers	St. Clairsville	Sept. 24, 25 and 26	St. Clairsville.
Brown	J. W. Hedrick	Russellville	Oct. 1, 2, 3 and 4	Georgetown.
Butler	W. C. Shepherd	Hamilton	Sept. 30 and Oct. 1, 2, 3 and 4	Hamilton.
Carroll	C. A. Tope	Carrollton	Sept. 24, 25, 26 and 27	Carrollton.
Champaign	J. W. Crowl	Urbana	Aug. 20, 21, 22 and 23	Urbana.

Clark	Wm. Jenkins.....	Seth.....	Aug. 27, 28, 29 and 30.	Springfield.
Clermont	John Rowan.....	Blowville.....	Sept. 2, 3, 4, 5 and 6	Boston (O'nsv. P. O.)
Columbiana	E. F. Moore.....	Lisbon.....	Sept. 17, 18 and 19	Lisbon.
Coshocton.....	Ed. L. Robinson ..	Coshocton	Oct. 8, 9, 10 and 11	Coshocton.
Crawford	B. Beal.....	Bucyrus.....	Sept. 24, 25, 26 and 27	Bucyrus.
Cuyahoga	Tryon Bailey.....	Chagrin Falls.....	Sept. 10, 11, 12 and 13	Chagrin Falls.
Cuyahoga, West ..	D. C. Stearns.....	Berea.....	Oct. 1, 2 and 3	Berea.
Darke	John P. Lucas.....	Greenville.....	Aug. 26, 27, 28, 29 and 30	Greenville.
Delaware	E. A. Furniss.....	Delaware.....	Aug. 27, 28, 29 and 30	Delaware.
Erie	Jno. T. Mack.....	Sandusky.....	Sept. 17, 18, 19 and 20	Sandusky.
Fairfield	W. T. McClenaghan	Lancaster.....	Oct. 8, 9, 10, 11 and 12	Lancaster.
Fayette	Willis N. Allen.....	Washington C. H.	Aug. 13, 14, 15 and 16	Washington C. H.
Fulton	Thos. Miksell.....	Wauseon.....	Sept. 17, 18, 19 and 20	Wauseon.
Genaga	P. W. Parmelee.....	Burton.....	Sept. 3, 4, 5 and 6	Burton.
Greene	R. R. Grieve.....	Xenia.....	Aug. 13, 14, 15 and 16	Xenia.
Guernsey	V. D. Craig.....	Washington.....	Sept. 24, 25, 26 and 27	Washington.
Hamilton	D. L. Sampson.....	Cincinnati (22 E. Third St.)	Aug. 13, 14, 15 and 16	Carthage.
Hancock	A. S. Thomas.....	Findlay.....	Sept. 18, 19, 20 and 21	Findlay.
Hardin	A. M. Rice.....	Kenton.....	Sept. 17, 18, 19 and 20	Kenton.
Harrison	J. C. Glover.....	Cadiz.....	Sept. 30 and Oct. 1 and 2	Cadiz.
Henry	J. L. Hatter.....	Napoleon.....	Sept. 8, 4, 5 and 6	Napoleon.
Highland	H. L. Wiggins.....	Hillsboro.....	Aug. 20, 21, 22 and 23	Hillsboro.
Hocking	A. H. Brooke.....	Logan.....	Aug. 29, 30 and 31	Logan.
Holmes	J. A. McDowell.....	Millersburg.....	Sept. 24, 25, 26 and 27	Millersburg.
Huron	John Laylin.....	Norwalk.....	Sept. 3, 4, 5 and 6	Norwalk.
Jefferson	J. O. Hayne.....	Smithfield.....	Sept. 25, 26 and 27	Smithfield.
Lawrence	W. W. Reckard.....	Proctorville.....	Sept. 12, 13 and 14	Proctorville.
Licking	Ad. C. Seymour.....	Newark.....	Oct. 1, 2, 3 and 4	Newark.
Logan	Banner M. Allen.....	Bellefontaine.....	Oct. 1, 2, 3 and 4	Bellefontaine.
Lorain	Geo. H. Lewis.....	Elyria.....	Sept. 24, 25, 26 and 27	Elyria.
Madison	E. B. Pancake.....	London.....	Sept. 10, 11, 12 and 13	London.
Mahoning	J. H. Ruhlman.....	Youngstown.....	Sept. 24, 25 and 26	Canfield.
Marion	J. E. Waddell.....	Marion.....	Oct. 1, 2, 3 and 4	Marion.
Medina	Hiram Goodwin.....	Medina.....	Sept. 3, 4 and 5	Medina.
Mercer	C. W. Halfhill.....	Mercer.....	Aug. 20, 21, 22, 23 and 24	Celina.
Miami	W. I. Tenney.....	Troy.....	Sept. 23, 24, 25, 26 and 27	Troy.
Monroe	Geo. P. Dorr.....	Woodsfield.....	Sept. 10, 11 and 12	Woodsfield.
Morgan	C. V. Harris.....	McConnelsville.....	Sept. 3, 4, 5 and 6	McConnelsville.
Morrow	O. J. Miller.....	Mt. Giload.....	Oct. 1, 2, 3 and 4	Mt. Giload.
Muskingum	J. D. Mercer.....	Zanesville.....	Sept. 10, 11, 12 and 13	Zanesville.

COUNTY FAIRS IN OHIO FOR 1895, WITH TIME AND PLACE.—CONCLUDED.

County.	Secretary.	Post-office.	Time of Fair.	Place of Fair.
Noble	Joseph Johnson	Sarahsville.	Sept. 18, 19 and 20	Sarahsville.
Ottawa	J. J. Ineichen	Port Clinton	Sept. 4, 5 and 6	Port Clinton.
Paulding	F. M. Bashore	Paulding.	Aug. 27, 28, 29 and 30	Paulding.
Perry	James E. Curran	New Lexington	Aug. 28, 29 and 30	New Lexington.
Portage	Lafayette Smith	Ravenna.	Sept. 17, 18 and 19	Ravenna.
Preble	Henry H. Farr	Eaton.	Sept. 23, 24, 25, 26 and 27	Eaton.
Putnam	A. P. Sandles	Ottawa.	Oct. 1, 2, 3, 4 and 5	Ottawa.
Richland	Newton Charles	Mansfield	Sept. 10, 11, 12 and 13	Mansfield.
Ross	H. W. Woodrow.	Chillicothe.	Aug. 6, 7, 8 and 9	Chillicothe.
Sandusky	James A. Smith	Fremont	Sept. 24, 25, 26 and 27	Fremont.
Scioto	Edgar L. Draper	Portsmouth.	July 30 and 31 and Aug. 1 and 2	Portsmouth.
Shelby	G. C. Anderson	Sidney	Sept. 17, 18, 19 and 20	Sidney.
Stark	A. J. Dehoff	Canton	Sept. 23, 24, 25, 26 and 27	Canton.
Summit	Albert Hale	Akron	Oct. 1, 2, 3 and 4	Akron.
Trumbull	James L. Kennedy	Warren	Sept. 10, 11 and 12	Warren.
Tuscarawas	H. W. Streb.	Canal Dover	Oct. 1, 2, 3 and 4	Canal Dover.
Union	E. W. Porter	Marysville	Sept. 24, 25, 26 and 27	Marysville.
Van Wert	O. D. Swartout	Van Wert	Sept. 10, 11, 12 and 13	Van Wert.
Vinton	A. E. McGrath	McArthur	July 23, 24, 25 and 26	McArthur.
Warren	Geo. W. Cary	Lebanon	Aug. 20, 21, 22 and 23	Lebanon.
Washington	J. C. Brennan	Marietta	Aug. 28, 29 and 30	Marietta.
Wayne	I. N. Kinney	Wooster	Sept. 17, 18, 19 and 20	Wooster.
Wood	J. O. Avery	Weston	Sept. 24, 25, 26, 27 and 28	Bowling Green.
Wyandot	Henry Kear	Upper Sandusky	Oct. 6, 7, 8 and 9	Upper Sandusky.

TABLE II — CATTLE.

Counties.	Short Horns.			Devons.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	7	\$ 45 00	\$ 36 00	...	...	...
Allen	24	60 50	53 50	...	...	...
Ashland .....	...	...	...	...	...	...
Ashtabula	19	51 00	30 00	1	\$ 51 00	\$ 5 00
Athens	8	50 00	30 00	...	50 00	...
Auglaize	20	60 00	53 00	10	60 00	43 00
Belmont	5	62 00	23 00	...	62 00	...
Brown	11	62 00	47 00	...	...	...
Butler	18	123 00	103 00	...	...	...
Carroll	26	72 00	69 00	...	...	...
Champaign	11	79 00	48 00	...	...	...
Clark	15	96 00	79 00	17	96 00	83 00
Clermont	23	73 00	65 00	...	...	...
Clinton .....	...	...	...	...	...	...
Columbiana	10	57 00	42 00	...	...	...
Coshocton	26	157 00	134 00	48	157 00	155 00
Crawford	19	70 00	58 50	...	70 00	...
Cuyahoga	11	22 00	12 00	8	22 00	10 50
Cuyahoga, West .....	...	...	...	...	11 00	9 00
Darke	29	124 00	105 30	...	...	...
Defiance .....	...	...	...	...	...	...
Delaware .....	...	...	...	...	...	...
Erie .....	...	...	...	...	...	...
Fairfield	21	166 00	87 00	...	...	...
Fayette .....	...	...	...	...	...	...
Franklin .....	...	...	...	...	...	...
Fulton	9	63 00	34 00	...	...	...
Gallia .....	...	...	...	...	...	...
Geauga	25	47 00	35 00	22	47 00	38 00
Greene	8	84 00	45 00	25	84 00	79 00
Guernsey	18	78 00	71 00	8	78 00	32 00
Hamilton	20	116 00	103 00	17	116 00	104 00
Hancock	58	74 00	70 00	...	...	...
Hardin .....	...	78 00	...	...	78 00	...
Harrison	12	56 00	34 00	...	...	...
Henry .....	...	...	...	...	...	...
Highland .....	...	...	...	...	...	...
Hocking .....	...	...	...	...	...	...
Holmes	13	43 50	36 00	1	16 50	4 00
Huron	* 3	90 00	11 00	See	Short	Horns.
Jackson .....	...	...	...	...	...	...
Jefferson	23	89 00	81 00	...	...	...
Knox .....	...	...	...	...	...	...
Lake .....	...	...	...	...	...	...
Lawrence .....	...	...	...	...	...	...
Licking	23	114 00	114 00	27	114 00	114 00
Logan	21	84 00	75 00	...	...	...
Lorain	21	85 00	79 00	14	85 00	63 50
Lucas .....	...	...	...	...	...	...

* Includes all cattle.

TABLE II — CATTLE — CONTINUED.

Counties.	Short Horns.			Devons.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Madison	5	\$ 123 00	\$ 27 00	.....	.....	.....
Mahoning	14	83 00	63 00	.....	.....	.....
Marion	18	67 00	56 00	.....	.....	.....
Medina .....	.....	57 00	.....	.....	.....	.....
Meigs .....	.....	.....	.....	.....	.....	.....
Mercer	19	92 00	75 00	33	\$ 92 00	\$ 90 00
Miami	6	97 00	16 00	14	97 00	72 00
Monroe	5	46 00	22 00	.....	46 00	.....
Montgomery .....	.....	.....	.....	.....	.....	.....
Morgan .....	.....	36 00	.....	.....	34 00	.....
Morrow	4	58 00	16 00	.....	.....	.....
Muskingum	25	81 00	73 00	22	81 00	76 75
Noble	8	57 00	22 00	.....	.....	.....
Ottawa .....	.....	.....	.....	.....	.....	.....
Paulding .....	.....	.....	.....	.....	.....	.....
Perry	11	46 00	32 50	7	46 00	18 00
Pickaway .....	.....	.....	.....	.....	.....	.....
Pike .....	.....	.....	.....	.....	.....	.....
Portage .....	.....	44 00	.....	10	44 00	30 00
Preble .....	.....	82 00	.....	.....	See	Jerseys.
Putnam	33	94 00	77 00	21	94 00	78 00
Richland	20	70 00	60 00	.....	70 00	.....
Ross .....	.....	106 00	.....	.....	.....	.....
Sandusky	30	108 00	84 00	.....	.....	.....
Scioto	10	58 00	44 00	.....	.....	.....
Seneca .....	.....	.....	.....	.....	.....	.....
Shelby	24	61 00	57 00	.....	46 00	.....
Stark	7	96 00	38 00	.....	.....	.....
Summit	8	71 00	40 00	26	71 00	62 00
Trumbull .....	.....	.....	.....	.....	.....	.....
Tuscarawas	9	70 50	47 00	.....	.....	.....
Union	29	92 00	92 00	.....	.....	.....
Van Wert	19	88 00	79 00	.....	.....	.....
Vinton .....	.....	.....	.....	.....	.....	.....
Warren	11	54 00	42 00	.....	43 00	.....
Washington	12	40 00	29 50	6	40 00	15 00
Wayne	17	62 00	38 85	.....	.....	.....
Williams .....	.....	.....	.....	.....	.....	.....
Wood	25	62 00	60 00	16	62 00	49 00
Wyandot	4	77 00	16 00	.....	.....	.....
Totals	930	\$ 4,709 50	\$ 3,070 15	353	\$ 2,063 50	\$ 1,230 75

TABLE II—CATTLE—CONTINUED.

Counties.	Polled Breeds.			Herefords.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams						
Allen	21	\$ 60 50	\$ 17 00		\$ 60 50	
Ashland						
Ashtabula	18	102 00	43 00			
Athens	7	50 00	21 00	4	50 00	\$ 16 00
Auglaize	30	120 00	105 00		60 00	
Belmont		62 00			62 00	
Brown	1	51 00	9 00	42		
Butler	36	246 00	224 00	14	123 00	122 00
Carroll	8	42 00	26 00			
Champaign	14	158 00	59 00			
Clark	54	384 00	208 00		96 00	
Clermont						
Clinton						
Columbiana	17	57 00	53 00			
Coshocton	21	157 00	98 00			
Crawford		70 00			70 00	
Cuyahoga		22 00		3	22 00	7 50
Cuyahoga, West		125 50	91 25			
Darke	17	124 00	93 60		124 00	
Defiance						
Delaware	13	98 00	65 00			
Erie						
Fairfield	26	166 00	128 00			
Fayette						
Franklin						
Fulton	1	126 00	3 00	14	63 00	50 50
Gallia						
Geauga	17	94 00	39 00		47 00	
Greene	12	84 00	68 00			
Guernsey	2	78 00	8 00	1		6 00
Hamilton				19	116 00	65 00
Hancock	32	74 00	70 00			
Hardin		78 00		10	78 00	37 00
Harrison						
Henry						
Highland						
Hocking						
Holmes		43 50				
Huron	See	Short	Horns.	See	Short	Horns.
Jackson						
Jefferson						
Knox						
Lake						
Lawrence						
Licking	20	114 00	114 00		114 00	
Logan	10	168 00	55 00		84 00	
Lorain	51	170 00	142 50	10	85 00	46 00
Lucas	12	123 00	82 50			
Madison	13	83 00	63 00			

TABLE II—CATTLE—CONTINUED.

Counties.	Polled Breeds.			Herefords.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Mahoning				23	\$ 60 00	\$ 60 00
Marion	10	\$ 57 00	\$ 35 50		57 00	
Medina						
Meigs	36	92 00	90 00		78 50	
Mercer	19	97 00	76 00	13	97 00	46 00
Miami	5	46 00	21 00	3	46 00	13 00
Monroe						
Montgomery		35 00				
Morgan	17	58 00	54 00		58 00	
Morrow	16	81 00	53 00	5	81 00	27 00
Muskingum						
Noble						
Ottawa	5	63 50	31 00			
Paulding	4	46 00	14 00			
Perry						
Pickaway						
Pike	23	88 00	62 50		44 00	
Portage	16	82 00	68 00		82 00	
Preble	43	188 00	166 00		94 00	
Putnam	18	70 00	56 00		70 00	
Richland		76 00			70 00	
Ross	14	108 00	71 00	12	108 00	63 00
Sandusky						
Scioto						
Seneca	12	122 00	51 00		61 00	
Shelby	37	152 00	132 00		66 00	
Stark	28	142 00	110 00		71 00	
Summit	38	123 00	115 00			
Trumbull	18	141 00	84 00			
Tuscarawas	20	184 00	184 00			
Union	12	88 00	73 00		88 00	
Van Wert						
Vinton		43 00			43 00	
Warren	3	60 00	8 50			
Washington	30	62 00	37 10			
Wayne						
Williams	48	136 00	110 00		62 00	
Wood	8	77 00	35 00			
Wyandot						
Totals.....	933	\$ 5,848 00	\$ 3,623 45	173	\$ 2,591 00	\$ 559 00

TABLE II — CATTLE — CONTINUED.

Counties.	Jerseys.			Holsteins.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	16	\$ 45 00	\$ 45 00	.....	\$ 45 00	.....
Allen	27	60 50	49 50	.....	60 50	.....
Ashland .....	.....	.....	.....	.....	.....	.....
Ashtabula	36	51 00	48 00	9	51 00	\$ 27 00
Athens	8	50 00	22 00	3	50 00	10 00
Auglaize	19	60 00	53 00	.....	60 00	.....
Belmont	5	62 00	21 00	8	62 00	25 00
Brown	42	62 00	59 00	1	62 00	4 00
Butler	42	123 00	124 00	24	123 00	119 00
Carroll	20	42 00	38 00	8	42 00	30 00
Champaign	63	84 00	81 00	22	80 00	71 00
Clark	13	96 00	57 00	.....	96 00	.....
Clermont	42	73 00	73 00	1	58 00	8 00
Clinton .....	.....	.....	.....	.....	.....	.....
Columbiana	43	57 00	57 00	10	57 00	43 00
Coshocton	16	157 00	105 00	38	157 00	146 50
Crawford	10	70 00	15 75	2	70 00	3 75
Cuyahoga	5	22 00	10 00	14	22 00	17 00
Cuyahoga, West	100	62 75	48 75	.....	62 75	14 25
Darke	21	124 00	97 20	14	124 00	100 80
Defiance .....	.....	.....	.....	.....	.....	.....
Delaware .....	.....	.....	.....	.....	.....	.....
Erie .....	.....	.....	.....	.....	.....	.....
Fairfield	26	108 00	86 00	.....	.....	.....
Fayette .....	.....	.....	.....	.....	.....	.....
Franklin .....	.....	.....	.....	.....	.....	.....
Fulton	30	63 00	56 00	26	63 00	50 00
Gallia .....	.....	.....	.....	.....	.....	.....
Geauga	25	47 00	38 00	37	47 00	45 00
Greene	34	84 00	83 00	.....	.....	.....
Guernsey	15	78 00	47 00	7	78 00	29 00
Hamilton	47	116 00	103 00	39	116 00	116 00
Hancock	31	74 00	69 00	14	76 00	62 00
Hardin	13	78 00	31 00	4	78 00	18 00
Harrison	19	32 00	28 00	.....	.....	.....
Henry .....	.....	.....	.....	.....	.....	.....
Highland	6	27 00	27 00	.....	.....	.....
Hocking .....	.....	.....	.....	.....	.....	.....
Holmes	16	43 50	38 00	8	43 50	26 00
Huron	See	Short	Horns.	See	Short	Horns.
Jackson .....	.....	.....	.....	.....	.....	.....
Jefferson	39	89 00	82 00	22	89 00	35 00
Knox .....	.....	.....	.....	.....	.....	.....
Lake .....	.....	.....	.....	.....	.....	.....
Lawrence	16	48 00	31 00	.....	.....	.....
Licking	34	114 00	114 00	11	51 00	10 00
Logan	15	84 00	70 00	.....	84 00	.....
Lorain	25	85 00	76 50	12	85 00	51 50
Lucas .....	.....	.....	.....	.....	.....	.....

† Includes Holsteins and Ayrshires.

TABLE II — CATTLE — CONTINUED.

Counties.	Jerseys.			Holsteins.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Madison	22	\$ 123 00	\$ 102 50	25	\$ 123 00	\$ 78 00
Mahoning	38	83 00	79 00	33	83 00	67 00
Marion	24	67 00	37 00	...	...	...
Medina	21	57 00	51 00	...	57 00	...
Meigs .....	...	...	...	...	...	...
Mercer	24	78 50	65 00	30	78 50	78 50
Miami	36	97 00	90 00	2	97 00	13 00
Monroe	6	46 00	18 00	3	46 00	11 00
Montgomery .....	...	...	...	...	...	...
Morgan	1	20 00	1 50	...	36 00	...
Morrow	29	58 00	53 00	10	58 00	32 00
Muskingum	13	81 00	61 25	12	81 00	43 50
Noble .....	...	...	...	...	...	...
Ottawa .....	...	...	...	...	...	...
Paulding	11	68 00	55 00	4	64 00	23 00
Perry	7	46 00	20 00	...	...	...
Pickaway .....	...	...	...	...	...	...
Pike .....	...	...	...	...	...	...
Portage	3	44 00	12 50	2	44 00	7 00
Preble	29	82 00	74 00	...	82 00	...
Putnam	28	94 00	77 00	16	94 00	75 00
Richland	49	70 00	70 00	...	...	...
Ross	13	66 00	66 00	31	56 00	56 00
Sandusky	38	108 00	94 00	8	108 00	39 00
Scioto	7	36 00	18 00	14	49 00	49 00
Seneca .....	...	...	...	...	...	...
Shelby	9	61 00	37 00	10	61 00	34 00
Stark	22	96 00	83 00	...	96 00	...
Summit	18	71 00	67 50	15	71 00	62 00
Trumbull	31	123 00	118 00	28	123 00	96 00
Tuscarawas	11	70 50	48 00	1	70 50	5 00
Union	19	92 00	92 00	17	92 00	92 00
Van Wert	6	88 00	62 00	5	88 00	24 00
Vinton .....	...	...	...	...	...	...
Warren	18	54 00	46 00	...	40 00	...
Washington	2	40 00	19 00	1	39 00	6 50
Wayne	17	62 00	30 45	11	62 00	30 45
Williams .....	...	...	...	...	...	...
Wood	50	62 00	62 00	28	62 00	50 00
Wyandot	6	65 00	22 00	8	65 00	37 00
Totals	1,517	\$ 4,688 75	\$ 3,715 40	646	\$ 4,118 75	\$ 2,070 75

† Includes Devons.

TABLE II—CATTLE—CONTINUED.

Counties	Ayrshires.			Any Other Breeds.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	8	\$ 21 00	\$ 21 00
Allen	26	92 50	83 40
Ashland
Ashtabula	12	\$ 51 00	\$ 38 00	38	170 00	75 00
Athens	5	16 00	16 00
Auglaize	6	94 00	12 00
Belmont	62 00	...	...	...	...
Brown
Butler	123 00	...
Carroll	11	26 00	21 00	...	...	...
Champaign
Clark	96 00	...	...	...	...
Clermont
Clinton
Columbiana
Coshocton	25	157 00	141 00
Crawford	70 00	...
Cuyahoga	10	22 00	12 00	...	...	...
Cuyahoga, West	62 75	40 25	...	73 25	18 50
Darke	28	160 00	160 00
Defiance
Delaware	† 24	176 00	125 00
Erie
Fairfield
Fayette
Franklin
Fulton	63 00	...	29	30 00	25 00
Gallia
Geauga	11	47 00	18 00	59	105 00	92 00
Greene	22	184 00	134 00
Guernsey	3	79 00	28 00
Hamilton
Hancock	48	65 00	65 00
Hardin	78 00	...	4	30 00	14 00
Harrison	17	46 00	40 00
Henry
Highland
Hocking
Holmes	11	16 50	16 50	10	42 00	42 00
Huron	*	*
Jackson
Jefferson	19	42 00	33 00
Knox
Lake
Lawrence	10	25 00	16 50
Licking	39	68 00	24 00
Logan	84 00	...	42	119 00	87 00
Lorain	16	85 00	73 00	6	85 00	26 00
Lucas

† Includes Jerseys. * See Short Horns.

TABLE II—CATTLE—CONTINUED.

Counties.	Ayrshires.			Any Other Breeds.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Madison
Mahoning	11	\$ 50 00	\$ 50 00
Marion	23	100 00	100 00
Medina	26	\$ 57 00	\$ 53 50	15	25 00	21 00
Meigs
Mercer
Miami	13	179 00	48 00
Monroe	10	62 00	24 00
Montgomery
Morgan	2	14 00	3 75	...	...	...
Morrow
Muskingum	25	80 00	77 50
Noble	6	36 50	9 00
Ottawa
Paulding	3	58 00	18 00
Perry
Pickaway
Pike
Portage	4	44 00	15 50	15	53 25	30 50
Preble	13	58 00	46 00
Putnam	77	159 00	136 00
Richland	11	70 00	47 00	21	46 00	46 00
Ross	61 00
Sandusky	33	184 00	97 00
Scioto	12	70 00	70 00
Seneca
Shelby	61 00	...	...	27 00	22 00
Stark	14 00	...
Summit	71 00	...	18	114 00	59 00
Trumbull	23	123 00	66 00
Tuscarawas	10	50 00	51 50
Union
Van Wert	88 00	125 00
Vinton
Warren	9	67 00	62 00
Washington	17	31 00	16 00
Wayne
Williams
Wood	27	62 00	50 00	26	140 00	110 00
Wyandot	6	44 00	44 00
Totals	141	\$ 1,072 25	\$ 388 50	844	\$ 3,931 50	\$ 2,667 90

TABLE II — CATTLE — CONTINUED.

Counties.	Fat Cattle and Work Oxen.		
	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	2	\$ 10 00	\$ 10 00
Allen .....	..	..	..
Ashland .....	..	..	..
Ashtabula	9	73 00	12 00
Athens	2	32 00	5 00
Auglaize .....	..	..	..
Belmont	2	32 00	8 00
Brown	3	31 00	15 00
Butler .....	..	..	..
Carroll	5	21 00	17 00
Champaign .....	..	..	..
Clark	1	55 00	12 00
Clermont .....	..	..	..
Clinton .....	..	..	..
Columbiana	14	47 00	41 00
Coshocton	3	39 50	12 50
Crawford	3	34 00	13 50
Cuyahoga	14	32 00	17 00
Cuyahoga, West .....	..	..	..
Darke .....	..	..	..
Defiance .....	..	..	..
Delaware .....	..	..	..
Erie .....	..	..	..
Fairfield .....	..	..	..
Fayette .....	..	..	..
Franklin .....	..	..	..
Fulton .....	..	15 00	..
Gallia .....	..	..	..
Geauga	11	81 00	23 00
Greene .....	..	..	..
Guernsey	2	18 00	8 00
Hamilton .....	..	..	..
Hancock .....	..	..	..
Hardin .....	..	15 00	..
Harrison .....	..	..	..
Henry .....	..	..	..
Highland .....	..	..	..
Hocking .....	..	..	..
Holmes .....	..	..	..
Huron	See	Short	Horns.
Jackson .....	..	..	..
Jefferson	1	6 00	4 00
Knox .....	..	..	..
Lake .....	..	..	..
Lawrence	10	33 00	24 00
Licking	6	44 00	15 00
Logan	2	24 00	7 50
Lorain	11	54 00	33 00
Lucas .....	..	..	..
Madison .....	..	..	..
Mahoning	15	55 00	33 00

TABLE II—CATTLE—CONCLUDED.

Counties.	Fat Cattle and Work Oxen.		
	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	8	\$ 47 00	\$ 17 00
Medina	11	42 00	21 00
Meigs .....	..	..	..
Mercer	6	38 00	12 00
Miami .....	..	..	..
Monroe .....	..	..	..
Montgomery .....	..	..	..
Morgan .....	..	42 00	..
Morrow	2	15 00	5 00
Muskingum	1	27 00	7 50
Noble .....	..	..	..
Ottawa .....	..	..	..
Paulding	6	35 00	25 00
Perry	5	34 00	12 50
Pickaway .....	..	..	..
Pike .....	..	..	..
Portage	7	80 00	24 50
Preble .....	..	..	..
Putnam .....	..	..	..
Richland .....	..	..	..
Ross .....	..	..	..
Sandusky	5	25 00	..
Scioto .....	..	..	..
Seneca .....	..	..	..
Shelby .....	..	15 00	10 00
Stark	6	72 00	24 00
Summit .....	..	..	..
Trumbull	9	38 00	23 00
Tuscarawas .....	..	33 50	..
Union .....	..	..	..
Van Wert .....	..	..	..
Vinton .....	..	..	..
Warren .....	..	..	..
Washington	12	44 00	32 00
Wayne .....	..	..	..
Williams .....	..	..	..
Wood	16	70 00	68 00
Wyandot .....	..	..	..
Totals	210	\$1,409 00	\$595 00

TABLE II—HORSES.

Counties.	Thoroughbreds. (Running Horses.)			Roadster.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams				31	\$ 169 00	\$ 169 00
Allen	16	\$ 85 50	\$ 54 00	33	66 00	46 50
Ashland						
Ashtabula				54	115 00	81 00
Athens				20	65 00	36 00
Auglaize	7			13	59 00	25 00
Belmont	3	47 00	20 00	15	116 00	50 00
Brown				34	128 00	128 00
Butler				137	368 00	368 00
Carroll				58	90 00	84 00
Champaign		15 00		88	153 00	127 00
Clark	3	96 00	20 00	51	96 00	73 00
Clermont				52	117 00	92 00
Clinton						
Columbiana				18	75 00	57 00
Coshocton				48	201 00	155 00
Crawford	17	180 00	159 50	10	101 00	15 75
Cuyahoga				23	50 00	37 50
Cuyahoga, West					51 00	27 00
Darke				54	146 00	131 40
Defiance						
Delaware				23	96 00	72 00
Erie						
Fairfield	6	98 00	25 00	75	230 00	162 00
Fayette						
Franklin						
Fulton				66	154 50	103 50
Gallia						
Geauga				68	96 00	75 00
Greene	3	12 00	8 00	36	124 00	86 00
Guernsey				22	91 00	70 00
Hamilton	9	15 00	15 00	149	193 00	193 00
Hancock	6	100 00	100 00	18	192 00	78 00
Hardin	10	200 00	160 00	28	94 00	48 00
Harrison						
Henry						
Highland						
Hocking	1	8 00	8 00	1	4 00	4 00
Holmes				35	100 50	83 50
Huron				30	123 25	61 50
Jackson						
Jefferson				50	94 00	59 00
Knox						
Lake						
Lawrence				22	47 00	40 00
Licking	14	97 00	56 00	59	148 00	132 00
Logan				73	292 00	217 00
Lorain				45	72 00	67 50
Lucas						
Madison	7	106 00	40 00	45	121 00	97 50
Mahoning				38	117 00	87 00

* Diplomas.

TABLE II — HORSES — CONTINUED.

Counties.	Thoroughbreds. (Running Horses.)			Roadster.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	14	\$ 101 00	\$ 50 00	32	\$ 99 00	\$ 79 00
Medina				62	81 00	83 00
Meigs						
Mercer	3	86 50	18 00			
Miami				89	216 00	198 00
Monroe	3	30 00	30 00	11	58 00	40 00
Montgomery						
Morgan				24	60 00	22 50
Morrow				46	87 00	62 00
Muskingum				36	149 00	110 25
Noble	1	45 00	5 00			
Ottawa						
Paulding	1	27 00	10 00	16	82 00	39 00
Perry	9	35 00	25 00	16	73 50	56 00
Pickaway						
Pike						
Portage		100 50		22	100 50	44 50
Preble				71	148 00	140 00
Putnam				90	330 00	263 00
Richland				14	64 00	38 00
Ross				68	197 00	179 00
Sandusky				38	186 00	72 00
Scioto				17	67 00	60 00
Seneca						
Shelby				41	124 00	94 00
Stark				29	192 00	145 00
Summit				59	268 00	214 00
Trumbull				32	100 00	47 00
Tuscarawas	15	73 00	64 00	15	91 00	43 00
Union				43	92 00	92 00
Van Wert	6	173 00	59 00	37	141 00	85 00
Vinton						
Warren				46	95 00	93 00
Washington	1	56 00		22	53 50	29 00
Wayne				43	143 00	61 25
Williams						
Wood				76	178 00	178 00
Wyandot				51	179 00	134 00
Totals	155	\$ 1,736 50	\$ 926 50	2,668	\$ 8,211 75	\$ 6,141 15

TABLE II—HORSES—CONTINUED.

Counties.	General Purposes.			Draft (English.)		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	78	\$ 148 00	\$ 133 00	* 32	\$ 167 00	\$ 103 00
Allen	17	66 00	37 00	4	85 50	13 00
Ashland .....	.....	.....	.....	.....	.....	.....
Ashtabula	38	115 00	67 00	19	115 00	55 00
Athens	13	65 00	33 00	12	65 00	37 00
Auglaize	24	83 00	60 00	2	108 00	30 00
Belmont	11	114 00	42 00	* 6	116 00	27 00
Brown	64	120 00	120 00	.....	.....	.....
Butler	145	206 00	206 00	* 37	206 00	175 00
Carroll	24	90 00	53 00	* 15	90 00	61 00
Champaign	71	95 00	82 00	14	58 00	36 00
Clark	17	50 00	38 00	25	192 00	87 00
Clermont	98	150 00	144 00	49	153 00	143 00
Clinton .....	.....	.....	.....	.....	.....	.....
Columbiana	31	75 00	52 00	7	75 00	36 00
Coshocton	66	220 50	177 50	1	46 00	12 00
Crawford .....	.....	.....	.....	13	97 00	32 50
Cuyahoga	28	50 00	37 00	* 18	50 00	15 50
Cuyahoga, West .....	.....	46 50	27 50	* 67	49 50	36 00
Darke	34	146 00	89 10	12	146 00	64 80
Defiance .....	.....	.....	.....	.....	.....	.....
Delaware	9	65 00	25 00	.....	.....	.....
Erie .....	.....	.....	.....	.....	.....	.....
Fairfield	58	300 00	138 00	30	300 00	203 00
Fayette .....	.....	.....	.....	.....	.....	.....
Franklin .....	.....	.....	.....	.....	.....	.....
Fulton	30	70 50	45 00	* 40	151 50	103 50
Gallia .....	.....	.....	.....	.....	.....	.....
Geauga	58	96 00	65 00	36	84 00	60 00
Greene	23	74 00	67 00	* 7	104 00	28 00
Guernsey	31	91 00	67 00	20	91 00	64 00
Hamilton	147	221 00	201 00	63	159 00	156 00
Hancock	21	72 00	93 00	13	95 00	60 00
Hardin	15	95 00	50 00	8	84 00	26 00
Harrison	11	35 00	26 00	* 22	66 00	46 00
Henry .....	.....	.....	.....	.....	.....	.....
Highland	27	92 00	185 00	1	46 00	.....
Hocking	4	30 00	26 00	3	24 00	20 00
Holmes	41	100 50	84 00	2	27 00	12 00
Huron	13	64 00	15 50	.....	.....	.....
Jackson .....	.....	.....	.....	.....	.....	.....
Jefferson	35	68 00	56 00	22	126 00	48 00
Knox .....	.....	.....	.....	.....	.....	.....
Lake .....	.....	.....	.....	.....	.....	.....
Lawrence	34	47 00	44 00	17	47 00	35 00
Licking	48	155 00	137 00	15	204 00	109 00
Logan	55	179 50	121 50	8	127 50	57 00
Lorain	45	71 00	40 00	18	72 00	47 50
Lucas .....	.....	.....	.....	.....	.....	.....
Madison	22	106 00	71 00	5	106 00	19 00
Mahoning	35	119 00	86 00	2	76 00	14 00

TABLE II — HORSES — CONTINUED.

Counties.	General Purposes.			Draft (English.)		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	35	\$ 104 00	\$ 70 00	* 7	\$ 274 00	\$ 114 00
Medina	51	55 50	44 50	* 42	92 50	67 50
Meigs .....	.....	.....	.....	.....	.....	.....
Mercer .....	.....	.....	.....	* 40	290 00	137 50
Miami	86	203 00	147 00	* 77	362 00	264 00
Monroe	6	64 00	27 00	.....	.....	.....
Montgomery .....	.....	.....	.....	.....	.....	.....
Morgan	15	60 00	7 50	* 7	60 00	13 50
Morrow	27	87 00	57 00	1	87 00	8 00
Muskingum	45	149 00	128 50	* 28	149 00	98 50
Noble	13	105 00	49 00	5	82 00	16 50
Ottawa	4	75 00	10 75	.....	.....	.....
Paulding	8	80 00	29 00	12	68 00	43 00
Perry	12	73 50	34 50	* 10	73 50	41 00
Pickaway .....	.....	.....	.....	.....	.....	.....
Pike .....	.....	.....	.....	.....	.....	.....
Portage	39	100 50	80 50	* 21	100 50	55 50
Preble	47	139 00	132 00	* 19	176 00	84 00
Putnam	39	139 00	101 00	11	148 00	73 00
Richland	9	64 00	19 00	.....	84 00	.....
Ross	18	58 00	53 00	* 12	154 00	79 00
Sandusky	35	186 00	53 00	* 58	373 00	128 00
Scioto	6	29 00	26 00	* 10	85 00	53 00
Seneca .....	.....	.....	.....	.....	.....	.....
Shelby	42	147 00	123 00	* 29	199 00	104 00
Stark	41	127 00	102 00	13	115 00	94 00
Summit	47	98 00	88 00	39	192 00	138 50
Trumbull	27	100 00	40 00	13	100 00	38 00
Tuscarawas	26	74 00	68 00	4	73 00	20 00
Union	23	87 00	87 00	12	153 00	153 00
Van Wert	36	141 00	93 00	10	131 00	65 00
Vinton .....	.....	.....	.....	.....	.....	.....
Warren	40	111 00	90 00	.....	.....	.....
Washington	17	65 50	13 00	* 10	61 00	23 00
Wayne	20	63 00	25 55	16	75 00	23 10
Williams .....	.....	.....	.....	.....	.....	.....
Wood	60	202 00	160 00	26	131 00	120 00
Wyandot	32	146 00	96 00	* 39	172 00	60 00
Totals	2,427	\$ 7,144 50	\$ 5,115 90	1,237	\$ 7,872 50	\$ 4,184 40

* Includes all classes.

TABLE II — HORSES — CONTINUED.

Counties.	Draft (French).			Speed Horses.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams						
Allen	13	\$ 85 50	\$ 40 00	56	\$ 1,305 00	\$ 785 25
Ashland						
Ashtabula				67	1,100 00	880 00
Athens						
Auglaize	12	78 00	77 00	20	1,500 00	504 00
Belmont				24	615 00	480 00
Brown	45	122 00	98 00			
Butler				141	4,100 00	4,000 00
Carroll				49	870 00	640 00
Champaign	15	68 00	30 00	65	2,195 00	2,010 00
Clark	26	146 00	80 00	98	2,797 00	2,293 00
Clermont				41	725 00	715 00
Clinton						
Columbiana	4	75 00	15 00	37	575 00	375 00
Coshocton	34	247 00	160 00	39	2,500 00	2,450 00
Crawford				21	455 00	390 45
Cuyahoga				42	850 00	800 00
Cuyahoga, West						
Darke	8	146 00	55 80	129	2,900 00	2,875 00
Defiance						
Delaware	33	161 00	123 00	39	1,000 00	856 25
Erie						
Fairfield				103	3,955 00	3,650 00
Fayette						
Franklin						
Fulton				35	590 00	614 00
Gallia						
Geauga				35	3,000 00	950 00
Greene				79	1,800 00	1,282 50
Guernsey				52	347 00	324 00
Hamilton				67	3,250 00	2,144 50
Hancock	6	95 00	41 00	38	1,625 00	925 00
Hardin	11	84 00	35 00	60	1,500 00	1,200 00
Harrison				114	1,855 00	1,855 00
Henry						
Highland				50	831 00	831 00
Hocking				16	420 00	420 00
Holmes	3	27 00	12 00	42	1,450 00	1,170 00
Huron				33	635 00	275 00
Jackson						
Jefferson				20	540 00	354 00
Knox						
Lake						
Lawrence				8	190 00	190 00
Licking				89	3,650 00	3,415 50
Logan	14	127 50	63 00	48	1,375 00	1,375 00
Lorain				48	2,500 00	1,882 50
Lucas						
Madison	1	106 00	10 00	93	2,400 00	2,260 00
Mahoning	9	37 00	18 00	17	72 00	39 00

TABLE II — HORSES — CONTINUED.

Counties.	Draft (French).			Speed Horses.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion .....	...	.....	.....	52	\$ 1,600 00	\$ 1,600 00
Medina .....	...	.....	.....	45	1,300 00	1,009 25
Meigs .....	...	.....	.....	...	.....	.....
Mercer .....	...	.....	.....	47	2,250 00	1,359 60
Miami .....	...	.....	.....	80	2,210 00	2,165 00
Monroe .....	...	.....	.....	31	455 00	433 00
Montgomery .....	...	.....	.....	...	.....	.....
Morgan .....	...	.....	.....	25	830 00	722 50
Morrow	20	\$ 87 00	\$ 48 00	75	1,500 00	1,000 00
Muskingum .....	...	.....	.....	55	2,425 00	1,922 50
Noble .....	...	.....	.....	15	175 00	175 00
Ottawa .....	...	.....	.....	11	500 00	210 25
Paulding	10	68 00	35 00	24	1,050 00	1,050 00
Perry .....	...	.....	.....	49	1,275 00	1,120 00
Pickaway .....	...	.....	.....	...	.....	.....
Pike .....	...	.....	.....	...	.....	.....
Portage .....	...	.....	.....	...	.....	784 40
Preble .....	...	.....	.....	...	1,675 00	1,194 50
Putnam	11	148 00	88 00	71	1,530 00	1,269 00
Richland	4	84 00	18 00	55	2,000 00	2,200 00
Ross .....	...	.....	.....	55	2,960 00	2,345 00
Sandusky .....	...	.....	.....	45	1,500 00	1,006 25
Scioto .....	...	.....	.....	65	2,850 00	2,605 00
Seneca .....	...	.....	.....	...	.....	.....
Shelby .....	...	.....	.....	32	1,235 00	1,215 00
Stark	9	114 00	51 00	47	1,600 00	1,300 00
Summit	11	48 00	48 00	90	2,150 00	1,935 00
Trumbull .....	...	.....	.....	59	1,750 00	1,750 00
Tuscarawas .....	...	73 00	.....	28	1,000 00	660 00
Union	7	97 00	97 00	71	1,740 00	1,708 00
Van Wert	16	131 00	84 00	...	.....	.....
Vinton .....	...	.....	.....	...	.....	.....
Warren .....	...	.....	.....	49	2,150 00	1,770 00
Washington .....	...	.....	.....	...	.....	.....
Wayne	25	77 00	30 10	80	1,500 00	1,500 00
Williams .....	...	.....	.....	...	.....	.....
Wood	13	106 00	80 00	155	3,650 00	3,140 00
Wyandot .....	...	.....	.....	41	825 00	280 00
Totals	360	\$ 2,638 00	\$ 1,436 90	3,367	\$ 99,157 00	\$ 84,640 20

TABLE II—HORSES—CONTINUED.

Counties.	Horses, All Other Classes.			Mules and Asses.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	54	\$ 145 00	\$ 137 00	8	\$ 32 00	\$ 22 00
Allen	48	200 50	84 90	...	...	...
Ashland .....	...	...	...	...	...	...
Ashtabula .....	...	...	...	1	21 00	5 00
Athens	56	197 00	154 00	8	27 00	14 00
Auglaize	60	217 00	111 00	...	16 00	...
Belmont	*2	...	...	...	31 00	...
Brown	147	345 00	331 00	17	32 00	27 00
Butler	139	291 00	291 00	...	...	...
Carroll	22	45 00	43 00	...	...	...
Champaign	109	123 00	111 00	...	...	...
Clark	24	570 00	83 00	10	59 00	36 00
Clermont	80	119 00	119 00	34	83 00	66 00
Clinton .....	...	...	...	...	...	...
Columbiana	22	92 00	78 00	...	...	...
Coshocton	24	106 50	66 00	5	41 00	12 00
Crawford	13	265 00	91 75	...	...	...
Cuyahoga	32	111 00	80 00	...	...	...
Cuyahoga, West .....	...	52 00	34 00	...	...	...
Darke	63	395 00	204 50	...	...	...
Defiance .....	...	...	...	...	...	...
Delaware	52	189 00	132 00	...	...	...
Erie .....	...	...	...	...	...	...
Fairfield	52	202 00	157 00	...	...	...
Fayette .....	...	...	...	...	...	...
Franklin .....	...	...	...	...	...	...
Fulton	4	82 50	19 00	...	...	...
Gallia .....	...	...	...	...	...	...
Geauga	45	79 00	63 00	...	...	...
Greene	15	45 00	45 00	3	25 00	13 00
Guernsey	23	75 00	70 00	2	17 00	11 00
Hamilton	40	230 00	220 00	...	...	...
Hancock	56	335 00	206 00	...	...	...
Hardin	12	280 00	54 00	...	26 00	...
Harrison	90	130 00	117 00	...	...	...
Henry .....	...	...	...	...	...	...
Highland	34	124 00	124 00	...	...	...
Hocking	4	30 00	30 00	1	8 00	8 00
Holmes	63	272 00	186 00	...	...	...
Huron .....	...	...	...	...	...	...
Jackson .....	...	...	...	...	...	...
Jefferson	20	45 00	33 00	...	...	...
Knox .....	...	...	...	...	...	...
Lake .....	...	...	...	...	...	...
Lawrence	11	20 00	18 00	3	33 00	9 00
Licking	21	253 00	183 00	2	12 00	12 00
Logan	44	169 50	116 00	...	...	...
Lorain	18	57 00	45 00	...	...	...
Lucas .....	...	...	...	...	...	...
Madison	58	313 00	186 50	1	20 00	4 00
Mahoning	30	80 00	60 00	...	...	...

TABLE II—HORSES—CONCLUDED.

Counties.	Horses, All Other Classes.			Mules and Asses.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	57	\$ 118 00	\$ 97 00	....	....	....
Medina	23	58 00	38 00	....	....	....
Meigs .....	....	....	....	....	....	....
Mercer	7	156 50	39 00	....	....	....
Miami	41	306 00	200 00	9	\$ 84 00	\$ 37 00
Monroe	4	64 00	27 00	2	33 00	10 00
Montgomery .....	....	....	....	....	....	....
Morgan	18	75 00	27 75	6	21 00	9 75
Morrow	210	400 00	370 00	....	....	....
Muskingum	27	113 00	97 25	2	25 00	5 00
Noble	7	18 00	14 00	....	....	....
Ottawa .....	....	....	....	....	....	....
Paulding	13	82 00	78 00	....	....	....
Perry	5	38 00	28 00	....	....	....
Pickaway .....	....	....	....	....	....	....
Pike .....	....	....	....	....	....	....
Portage	10	81 50	29 50	7	37 00	25 00
Preble	37	105 00	100 00	16	53 50	39 50
Putnam	63	494 00	335 00	5	26 00	13 00
Richland	34	247 00	98 00	....	....	....
Ross .....	....	54 00	....	....	....	....
Sandusky	39	190 00	98 00	....	....	....
Scioto	10	77 00	51 00	....	....	....
Seneca .....	....	....	....	....	....	....
Shelby	13	42 00	42 00	....	....	....
Stark	23	112 00	78 00	....	....	....
Summit	32	162 00	121 00	....	....	....
Trumbull .....	....	....	....	....	....	....
Tuscarawas	39	131 50	113 00	....	....	....
Union	43	87 00	87 00	....	....	....
Van Wert	131	360 00	360 00	....	....	....
Vinton .....	....	....	....	....	....	....
Warren	169	240 00	167 00	....	....	....
Washington	3	16 00	6 00	4	28 25	6 75
Wayne .....	....	27 00	4 90	....	....	....
Williams .....	....	....	....	....	....	....
Wood .....	....	....	....	4	25 00	8 00
Wyandot	9	140 00	80 00	2	....	5 00
Totals	2,654	\$ 10,179 50	\$ 6,800 05	152	\$ 815 75	\$ 398 00

* Diplomas. † Includes draft, spans, etc.

TABLE II—SHEEP.

Counties.	Fine Wools.			Coarse and Long Wools.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	14	\$ 54 00	\$ 43 00	15	\$ 48 00	\$ 38 00
Allen	42	70 00	67 00	47	130 00	61 70
Ashland .....	...	...	...	...	...	...
Ashtabula	69	78 00	76 00	121	201 00	177 00
Athens	38	84 00	81 00	19	60 00	46 00
Auglaize	40	48 00	48 00	84	160 00	153 00
Belmont	16	79 00	46 00	9	40 00	27 00
Brown	45	95 00	81 00	47	95 00	82 00
Butler	76	200 00	196 00	70	200 00	196 00
Carroll	34	96 00	85 00	35	96 00	93 00
Champaign	118	156 00	148 00	81	156 00	148 00
Clark	51	98 00	98 00	101	294 00	290 00
Clermont .....	...	...	...	40	108 00	107 00
Clinton .....	...	...	...	...	...	...
Columbiana	56	66 00	66 00	44	99 00	97 00
Coshocton	76	183 50	183 50	81	313 50	299 50
Crawford	28	30 00	23 10	33	120 00	67 65
Cuyahoga	30	24 00	24 00	35	24 00	24 00
Cuyahoga, West .....	...	24 00	20 50	61	89 75	74 75
Darke	36	72 00	64 80	112	180 00	160 20
Defiance .....	...	...	...	...	...	...
Delaware	72	118 00	104 00	74	211 00	171 00
Erie .....	...	...	...	...	...	...
Fairfield	36	64 00	64 00	91	306 00	280 00
Fayette .....	...	...	...	...	...	...
Franklin .....	...	...	...	...	...	...
Fulton	45	52 50	48 00	78	69 00	68 00
Gallia .....	...	...	...	...	...	...
Geauga	46	75 00	67 00	135	165 00	163 00
Greene	20	45 00	45 00	60	135 00	135 00
Guernsey	26	92 00	79 00	16	56 00	56 00
Hamilton	53	111 00	101 00	40	74 00	70 00
Hancock	58	59 00	56 00	79	141 00	129 00
Hardin	56	75 00	75 00	42	90 00	72 00
Harrison	38	72 00	68 00	27	58 00	55 00
Henry .....	...	...	...	...	...	...
Highland	* 24	...	87 00	...	...	...
Hocking .....	...	...	...	...	...	...
Holmes	13	72 00	41 00	16	99 00	39 50
Huron .....	...	54 00	...	21	27 00	15 00
Jackson .....	...	...	...	...	...	...
Jefferson	60	114 00	112 00	26	75 00	62 00
Knox .....	...	...	...	...	...	...
Lake .....	...	...	...	...	...	...
Lawrence	5	18 00	10 00	8	18 00	13 00
Licking	38	170 00	150 00	73	233 00	224 00
Logan	28	49 00	39 00	70	104 00	82 50
Lorain	84	169 00	158 00	56	112 50	105 50
Lucas .....	...	...	...	...	...	...
Madison	11	42 50	36 50	28	85 00	71 00
Mahoning	34	92 00	86 00	40	93 00	90 00

TABLE II—SHEEP—CONCLUDED.

Counties.	Fine Wools.			Coarse and Long Wools.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	43	\$ 108 00	\$ 100 00	125	\$ 213 00	\$ 209 00
Medina	54	117 50	54 50	62	105 00	98 00
Meigs						
Mercer	50	61 00	61 00	138	244 00	237 00
Miami		36 00		88	198 00	178 00
Monroe	20	111 00	70 00	10	37 00	23 00
Montgomery						
Morgan	26	55 00	30 75	14	38 00	16 50
Morrow	31	56 00	54 00	50	84 00	84 00
Muskingum	44	125 00	124 00	45	125 00	115 00
Noble	12	38 50	30 00	9	48 50	19 50
Ottawa						
Paulding						
Perry	7	54 00	20 00	9	27 00	18 00
Pickaway						
Pike						
Portage	8	27 00	21 00	64	177 00	127 50
Preble	* 72	138 00	109 00	See	Fine	Wools.
Putnam	102	160 00	128 00	110	88 00	87 00
Richland	53	101 00	101 00	62	168 00	141 00
Ross		33 00		25	94 00	71 00
Sandusky	60	84 00	84 00	46	81 00	81 00
Scioto		17 00		6	43 00	14 00
Seneca						
Shelby	10	34 00	34 00	18	78 00	58 00
Stark	10	118 00	52 00	45	186 00	181 00
Summit	49	130 00	129 50	86	190 00	141 00
Trumbull	33	39 00	39 00	36	78 00	59 00
Tuscarawas	29	127 00	87 00	47	100 00	123 00
Union	161	154 50	154 50	66	154 50	154 50
Van Wert	40	50 00	50 00	91	331 00	331 00
Vinton						
Warren	9	33 00	25 00	59	159 00	133 00
Washington	34	64 25	27 50	61	43 75	40 00
Wayne				24	90 00	24 50
Williams						
Wood	28	43 00	40 00	42	109 00	100 00
Wyandot	13	45 00	40 00	14	56 00	56 00
Totals	2,490	\$ 5,161 25	\$ 4,444 15	3,467	\$ 7,911 50	\$ 6,953 80

* Includes all Sheep.

TABLE II—HOGS.

Counties.	Poland Chinas.			Berkshires.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Ashland	12	\$ 27 00	\$ 27 00	1	\$ 17 00	\$ 5 00
Adams	24	52 50	40 00	12	52 50	33 00
Allen						
Ashtabula	18	42 00	42 00	26	42 00	42 00
Athens	14	25 00	24 00			
Auglaize	41	60 00	54 00	26	60 00	58 00
Belmont		23 00			23 00	
Brown	25	47 00	47 00	21	56 00	54 00
Butler	38	148 00	141 00	47	148 00	148 00
Carroll	14	45 00	26 00	9	45 00	25 00
Champaign	53	49 00	49 00		39 00	
Clark	29	76 00	72 00	17	76 00	58 00
Clermont	21	40 00	40 00	7	40 00	26 00
Clinton						
Columbiana	15	31 00	34 00	21	39 00	39 00
Coshocton	18	50 00	37 00	36	60 00	57 00
Crawford	23	41 00	34 40		41 00	
Cuyahoga	7	23 00	10 00	12	23 00	14 25
Cuyahoga, West		21 75	6 50			
Darke	17	80 00	58 50	23	80 00	67 50
Defiance						
Delaware	31	59 00	51 00	24	59 00	57 00
Erie						
Fairfield	43	92 00	81 00	16	75 00	58 00
Fayette						
Franklin						
Fulton	43	33 00	33 00	14	33 00	19 00
Gallia						
Geauga	16	36 00	36 00	10	36 00	32 00
Greene	18	67 00	64 00	15	67 00	50 00
Guernsey	10	34 00	24 00			
Hamilton	61	82 00	75 00	25	82 00	82 00
Hancock	17	49 00	42 00	14	49 00	37 00
Hardin	29	53 00	40 00	22	53 00	43 00
Harrison	5	17 00	14 00			
Henry						
Highland						
Hocking	6	24 00	24 00			
Holmes	15	33 00	29 50	10	33 00	26 00
Huron		23 00			23 00	
Jackson						
Jefferson	18	30 00	30 00	16	30 00	30 00
Knox						
Lake						
Lawrence						
Licking	44	99 00	89 00	34	99 00	94 00
Logan	35	99 00	81 00	20	99 00	53 50
Lorain	9	37 50	35 00	10	37 50	37 50
Lucas						
Madison	28	93 00	87 00	21	93 00	88 50
Mahoning	32	68 00	62 00	22	68 00	54 00

TABLE II—HOGS—CONTINUED.

Counties.	Poland Chinas.			Berkshires.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	11	\$44 00	\$33 00	11	\$44 00	\$21 00
Medina	19	42 00	35 50	7	42 00	19 00
Meigs						
Mercer	17	73 00	50 00	30	73 00	68 00
Miami	53	71 00	73 00	19	71 00	64 00
Monroe	7	35 00	23 00		35 00	
Montgomery						
Morgan	7	15 00	5 00	5	10 00	4 00
Morrow	27	34 00	32 00	8	34 00	22 00
Muskingum	13	61 00	41 75	9	59 00	31 25
Noble	11	22 50	20 50			
Ottawa						
Paulding	14	24 00	19 50	7	22 50	18 50
Perry	2	23 25	6 00			
Pickaway						
Pike						
Portage		27 00		14	27 00	24 50
Preble	25	60 00	50 00	21	60 00	54 00
Putnam	19	39 00	38 00	13	39 00	29 00
Richland	17	53 00	53 00	31	53 00	50 00
Ross				14	46 00	40 00
Sandusky	51	83 00	73 00	30	87 00	80 00
Scioto	6	36 00	23 00	9	36 00	34 00
Seneca						
Shelby	11	44 00	32 00	8	38 00	29 00
Stark	28	74 00	67 00	3	74 00	10 00
Summit	18	57 00	45 50	24	57 00	48 50
Trumbull	26	41 00	41 00	18	27 00	28 00
Tuscarawas	6	32 00	19 00	6	32 00	24 00
Union	31	59 00	59 00	16	59 00	59 00
Van Wert	29	82 00	78 00	19	82 00	62 00
Vinton						
Washington		63 00		20	47 00	44 00
Warren		26 00			26 00	
Wayne	24	35 00	24 50	23	35 00	21 70
Williams						
Wood	24	56 00	50 00	18	56 00	46 00
Wyandot	13	43 00	34 00	13	43 00	39 00
Totals	1,338	\$3,264 50	\$2,666 15	927	\$3,091 50	\$2,358 70

TABLE II — HOGS — CONTINUED.

Counties.	Chester Whites.			All Other Breeds.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams						
Allen	35	\$ 52 50	\$ 59 50	47	\$ 64 50	\$ 53 35
Ashland						
Ashtabula	4	42 00	18 00	39	42 00	9 00
Athens				14	25 00	24 00
Auglaize	27	60 00	57 00	57	138 00	135 00
Belmont		23 00			66 00	
Brown	16	49 00	48 00	15	56 00	56 00
Butler	24	148 00	148 00	64	148 00	143 00
Carroll	12	45 00	31 00	12		
Champaign	26	39 00	35 00	17	58 00	48 00
Clark	15	76 00	57 00	33	152 00	117 00
Clermont	11	40 00	24 00	12	40 00	35 00
Clinton						
Columbiana	9	34 00	31 00	4	10 00	10 00
Coshocton	34	60 00	60 00	15	50 00	17 00
Crawford	18	41 00	28 80	20	40 00	18 40
Cuyahoga	7	23 00	10 00	20	25 00	20 00
Cuyahoga, West	25	21 75	4 00		33 75	25 25
Darke	38	80 00	72 00	32	160 00	144 00
Defiance						
Delaware	20	59 00	54 00	7	59 00	27 00
Erie						
Fairfield	12	51 00	36 00			
Fayette						
Franklin						
Fulton	20	33 00	29 00	19	38 00	39 50
Gallia						
Geauga	15	36 00	36 00	20	56 00	48 00
Greene	14	67 00	42 00			
Guernsey		22 00				
Hamilton	24	82 00	82 00	53	164 00	129 00
Hancock	28	49 00	49 00	25	79 00	70 00
Hardin	10	53 00	29 00	12	53 00	33 00
Harrison				10	24 00	16 00
Henry						
Highland				23		88 00
Hocking						
Holmes	16	33 00	27 50	15	86 00	43 00
Huron	19	23 00	21 00			
Jackson						
Jefferson	3	30 00	8 00			
Knox						
Lake						
Lawrence				8	26 00	18 00
Licking	19	99 00	90 00	53	248 00	200 00
Logan	34	99 00	94 00	22	99 00	62 00
Lorain	12	37 50	35 00	21	55 00	52 50
Lucas						
Madison	16	93 00	39 00	13	93 00	46 50
Mahoning				6	20 00	20 00

TABLE II — HOGS — CONCLUDED.

Counties.	Chester Whites.			All Other Breeds.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	13	\$ 44 00	\$ 36 00	29	\$ 31 00	\$ 31 00
Medina	23	42 00	42 00	48	58 00	56 50
Meigs .....	..	..	..	..	..	..
Mercer	35	73 00	69 00	103	219 00	205 00
Miami	35	71 00	70 00	49	205 00	128 00
Monroe	6	35 00	22 00	2	35 00	6 00
Montgomery .....	..	..	..	..	..	..
Morgan	14	20 00	9 00	3	10 00	3 75
Morrow	6	34 00	15 00	20	34 00	20 00
Muskingum	9	59 00	36 75	11	85 00	34 00
Noble .....	..	..	..	..	..	..
Ottawa .....	..	..	..	..	..	..
Paulding	7	25 00	15 00	15	35 00	17 00
Perry .....	..	..	..	..	..	..
Pickaway .....	..	..	..	..	..	..
Pike .....	..	..	..	..	..	..
Portage	11	27 00	25 50	13	40 50	34 50
Preble	13	60 00	50 00	16	60 00	56 00
Putnam	43	38 00	38 00	38	88 00	58 00
Richland	14	53 00	53 00	12	27 00	27 00
Ross .....	..	..	..	43	62 00	54 00
Sandusky	34	120 00	83 00	..	..	..
Scioto	8	36 00	31 00	5	10 00	10 00
Seneca .....	..	..	..	..	..	..
Shelby	22	44 00	41 00	16	52 00	33 00
Stark	13	74 00	46 00	16	74 00	54 00
Summit	13	57 00	47 00	41	114 00	98 00
Trumbull .....	..	..	..	15	21 00	8 00
Tuscarawas	7	32 00	26 00	16	104 00	58 00
Union	8	59 00	59 00	20	59 00	59 00
Van Wert	30	82 00	82 00	62	74 00	152 00
Vinton .....	..	..	..	..	..	..
Warren	14	58 00	48 00	14	58 00	47 00
Washington	15	26 00	22 00	28	43 00	34 00
Wayne	18	35 00	11 55	..	..	..
Williams .....	..	..	..	..	..	..
Wood	6	56 00	24 00	13	85 00	40 00
Wyandot	14	43 00	20 00	14	20 00	..
Totals	994	\$ 3,003 75	\$ 2,376 60	1,268	\$ 3,906 75	\$ 3,069 25

TABLE II—POULTRY AND MECHANIC ARTS.

Counties.	Poultry.			Mechanic Arts.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	150	\$119 00	\$51 00	51	\$42 00	\$28 50
Allen	152	96 00	46 35	48	107 00	57 60
Ashland	76	110 50	20 35	210	95 45	57 70
Ashtabula	78	60 00	51 50	32	50 00	30 50
Athens	347	147 00	147 00	85	.....	.....
Auglaize	61	90 00	28 25	94	202 00	68 00
Belmont	45	115 00	80 00	32	63 00	32 00
Brown	547	306 00	306 00	.....	.....	.....
Butler	80	69 00	39 00	26	72 00	49 00
Carroll	317	218 00	134 00	23	69 00	57 00
Champaign	238	353 00	200 00	.....	.....	.....
Clark	58	39 75	34 25	62	108 00	62 00
Clermont	141	86 00	68 00	8	56 00	28 00
Clinton	505	222 00	222 00	45	192 50	154 00
Columbiana	360	84 00	54 62	6	88 00	61 25
Coshocton	243	125 00	65 50	212	75 00	40 00
Crawford	166	46 30	46 30	88	34 50	29 75
Cuyahoga	347	254 50	123 30	185	375 00	251 55
Cuyahoga, West .....	.....	.....	.....	.....	.....	.....
Darke	132	151 80	66 60	40	14 00	7 00
Defiance .....	.....	.....	.....	.....	.....	.....
Delaware	117	155 00	89 00	.....	.....	.....
Erie .....	.....	.....	.....	.....	.....	.....
Fairfield .....	.....	.....	.....	.....	.....	.....
Fayette	165	102 60	81 10	25	60 50	32 00
Franklin .....	.....	.....	.....	.....	.....	.....
Fulton	470	65 00	63 00	91	35 00	30 00
Gallia	104	130 00	91 00	.....	.....	.....
Geauga	40	48 00	18 00	185	61 00	45 00
Greene	116	92 50	80 00	7	130 00	130 00
Guernsey	244	500 00	150 00	67	194 00	98 00
Hamilton	142	128 00	52 00	22	175 00	80 00
Hancock	70	35 00	35 00	20	34 00	20 00
Hardin .....	.....	.....	.....	.....	.....	.....
Harrison	30	.....	18 00	50	.....	Diplomas
Henry	3	3 00	3 00	.....	.....	.....
Highland	207	249 50	105 30	16	37 00	15 00
Hocking	101	101 00	47 00	.....	.....	.....
Holmes .....	.....	.....	.....	.....	.....	.....
Huron	44	47 00	10 84	81	135 00	62 60
Jackson .....	.....	.....	.....	.....	.....	.....
Jefferson .....	.....	.....	.....	.....	.....	.....
Knox	17	39 25	13 00	.....	.....	.....
Lake	331	176 50	160 60	65	292 50	180 00
Lawrence	139	70 50	48 50	52	82 50	70 50
Licking	536	172 25	172 25	121	84 00	73 31
Logan .....	.....	.....	.....	.....	.....	.....
Lorain	230	147 00	123 00	.....	.....	.....
Lucas	262	214 00	106 00	114	124 00	78 00
Madison .....	.....	.....	.....	.....	.....	.....
Mahoning .....	.....	.....	.....	.....	.....	.....

TABLE II—POULTRY AND MECHANIC ARTS—CONCLUDED.

Counties.	Poultry.			Mechanic Arts.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion .....	...	.....	.....	225	\$ 383 00	\$ 280 00
Medina	442	.....	142 25	56	29 00	21 75
Meigs .....	.....	.....	.....	...	.....	.....
Mercer	260	\$ 146 00	\$ 146 00	103	67 00	43 00
Miami	153	198 00	96 50	95	50 00	50 00
Monroe	65	97 00	56 00	8	10 00	8 00
Montgomery .....	.....	.....	.....	.....	.....	.....
Morgan	34	94 00	18 00	39	67 00	16 90
Morrow	278	225 00	106 00	.....	.....	.....
Muskingum	161	122 00	77 01	17	136 00	45 50
Noble	12	19 50	7 50	7	99 00	13 50
Ottawa .....	.....	.....	.....	15	63 00	14 50
Paulding	185	110 00	77 50	73	104 00	53 00
Perry	51	62 25	33 80	2	21 00	2 00
Pickaway .....	.....	.....	.....	.....	.....	.....
Pike .....	.....	.....	.....	.....	.....	.....
Portage	359	210 00	133 00	40	27 50	18 50
Preble	183	107 25	90 75	.....	.....	.....
Putnam	213	123 00	102 50	98	181 00	93 00
Richland	481	180 00	140 75	19	57 00	36 00
Ross	275	148 50	134 50	43	131 00	100 00
Sandusky	625	225 00	161 00	314	298 00	162 25
Scioto	154	141 00	92 50	8	58 00	16 50
Seneca .....	.....	.....	.....	.....	.....	.....
Shelby	157	163 00	111 50	86	54 75	22 50
Stark	905	600 00	393 50	.....	.....	.....
Summit	363	225 00	172 00	80	.....	.....
Trumbull	146	56 75	43 25	59	124 00	97 00
Tuscarawas	183	131 00	97 00	...	88 25	38 00
Union	411	186 00	186 00	137	144 00	116 00
Van Wert	426	222 00	318 00	92	60 00	60 00
Vinton .....	.....	.....	.....	.....	.....	.....
Warren	227	210 50	183 75	30	98 00	46 00
Washington	71	53 00	16 25	34	58 25	35 25
Wayne	200	125 00	57 14	31	40 00	10 50
Williams .....	.....	.....	.....	.....	.....	.....
Wood	138	102 00	88 00	...	.....	.....
Wyandot	117	122 00	104 00	9	21 00	21 00
Totals	14,687	\$ 9,573 70	\$ 6,636 56	3,883	\$ 5,557 70	\$ 3,348 91

TABLE II—HORTICULTURE AND FLORICULTURE.

Counties.	Farm Products.			Fruits.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	429	\$ 83 00	\$ 81 75	79	\$ 13 75	\$ 10 75
Allen	215	96 25	69 30	20	20 50	16 20
Ashland						
Ashtabula	874	124 40	124 20	122	101 25	33 80
Athens	57	43 00	15 75	413	225 00	100 00
Auglaize	503	118 00	118 00	42	15 00	15 00
Belmont	32	47 00	11 50	58	17 75	12 50
Brown	673	110 00	110 00	423	50 00	48 00
Butler	1,099	339 00	339 00	296	84 00	80 00
Carroll	487	95 00	91 75	156	30 00	20 75
Champaign	417	178 25	135 50	483	41 00	40 00
Clark	350	248 00	188 00	378	158 50	134 00
Clermont	420	91 00	79 10	647	115 25	73 50
Clinton						
Columbiana	554	100 00	100 00	280	56 50	53 50
Coshocton	250	111 00	90 50	16	33 25	17 75
Crawford	253	114 30	68 25	75	63 00	19 31
Cuyahoga	310	65 00	30 00	109	25 00	10 50
Cuyahoga, West	846	101 75	101 75		23 00	23 00
Darke	312	221 75	217 35	111	33 50	22 50
Defiance						
Delaware	118	81 50	52 75	41	36 00	12 50
Erie						
Fairfield	378	238 25	189 45	407	210 50	192 80
Fayette						
Franklin						
Fulton	366	78 10	59 10	364	46 25	35 60
Gallia						
Geauga	978	105 00	92 00			
Greene	354	218 00	195 75	90	60 00	50 00
Guernsey	410	200 00	95 00	250	75 00	41 00
Hamilton	15	171 00	150 00	247	108 00	94 00
Hancock	202	108 00	71 00	88	40 00	26 00
Hardin	80	80 00	67 00	35	26 00	16 00
Harrison	160	20 00	20 00	165	40 00	40 00
Henry						
Highland	83	27 50	27 50	81	20 00	20 00
Hocking						
Holmes	360	96 00	86 95	50	27 70	22 50
Huron	97	71 75	40 50	25	67 00	11 25
Jackson						
Jefferson	435	118 00	67 92	70	35 00	17 60
Knox						
Lake						
Lawrence	*324	138 55	65 55			
Licking	392	202 00	196 00	245	77 00	77 00
Logan	560	70 95	191 10	79	27 00	36 50
Lorain	476	288 00	271 25	355	107 00	107 00
Lucas						
Madison	210	204 50	139 00	362	109 25	80 00
Mahoning	640	225 00	133 00	185	45 00	34 00

TABLE II—HORTICULTURE AND FLORICULTURE—CONTINUED.

Counties.	Farm Products.			Fruits.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	374	\$ 158 00	\$ 150 00	163	\$ 80 00	\$ 75 00
Medina	356	68 00	66 70	191	14 20	30 20
Meigs	240	195 00	157 00	93	50 00	46 00
Mercer	227	143 50	128 00	578	109 00	102 00
Miami	147	30 00	15 00	100	28 00	8 00
Monroe	109	53 00	32 60	198	33 00	16 30
Montgomery	600	175 00	72 00	325	60 00	40 00
Morgan	174	176 50	101 00	187	277 00	122 75
Morrow	23	63 00	21 50	.....	.....	.....
Muskingum	50	60 00	28 25	.....	.....	.....
Noble	273	100 50	84 00	90	76 00	69 00
Ottawa	35	74 00	25 90	175	56 25	35 00
Paulding .....	.....	.....	.....	.....	.....	.....
Perry .....	.....	.....	.....	.....	.....	.....
Pickaway .....	.....	.....	.....	.....	.....	.....
Pike .....	.....	.....	.....	.....	.....	.....
Portage	384	111 30	80 85	166	54 00	40 75
Preble	255	93 25	65 00	79	22 50	16 75
Putnam	620	150 00	140 00	250	.....	.....
Richland	301	115 00	95 00	159	64 50	58 50
Ross	138	112 00	74 00	287	129 00	100 00
Sandusky	271	100 00	83 00	126	36 00	34 00
Scioto	65	148 50	68 00	250	125 00	60 50
Seneca .....	.....	.....	.....	.....	.....	.....
Shelby	334	73 70	62 70	85	54 35	31 60
Stark	*1,132	496 50	324 50	.....	.....	.....
Summit	1,395	301 75	413 75	576	104 50	104 50
Trumbull	335	70 75	67 25	144	52 00	44 00
Tuscarawas	495	123 25	96 60	166	36 75	26 75
Union	546	235 00	164 00	31	17 50	17 50
Van Wert	1,567	495 00	495 00	330	86 00	86 00
Vinton .....	.....	.....	.....	.....	.....	.....
Warren	335	112 50	103 50	419	77 00	75 00
Washington	30	226 10	12 90	67	.....	17 00
Wayne	344	77 60	44 65	136	31 00	14 69
Williams .....	.....	.....	.....	.....	.....	.....
Wood	1,286	244 00	235 00	585	89 75	81 00
Wyandot	244	200 00	81 00	20	23 00	14 00
Totals.....	27,404	\$ 9,811 50	\$ 7,771 17	12,723	\$ 4,049 25	\$ 3,011 60

* Includes fruits. † Includes pickles, canned fruit, etc.

TABLE II—HORTICULTURE AND FLORICULTURE—CONTINUED.

Counties.	Flowers.			Pickles, Canned Fruit, Jellies, Etc.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	26	\$ 27 00	\$ 21 00	325	\$ 35 50	\$ 34 00
Allen	2	25 25	.....	178	54 00	39 85
Ashland .....	.....	.....	.....	.....	.....	.....
Ashtabula	190	75 25	42 50	376	70 25	51 25
Athens	114	48 25	45 75	235	46 00	44 50
Auglaize	74	40 00	40 00	597	58 00	58 00
Belmont .....	.....	35 00	.....	60	18 00	7 25
Brown	215	65 00	60 00	443	40 00	38 00
Butler	166	197 00	199 00	666	98 00	98 00
Carroll	72	35 00	28 00	97	26 00	20 55
Champaign	11	41 00	26 00	426	71 25	69 50
Clark	169	223 00	197 00	393	131 00	120 00
Clermont	443	104 50	98 25	637	71 75	64 20
Clinton .....	.....	.....	.....	.....	.....	.....
Columbiana	195	76 50	76 50	305	45 00	42 50
Coshocton	30	35 00	30 00	189	46 00	45 00
Crawford	33	85 75	32 87	125	30 75	26 24
Cuyahoga	91	20 00	10 50	111	15 00	10 25
Cuyahoga, West	38	13 25	5 25	.....	23 25	23 25
Darke	126	84 50	70 65	457	87 00	77 85
Defiance .....	.....	.....	.....	.....	.....	.....
Delaware	24	71 50	37 00	158	39 45	32 75
Erie .....	.....	.....	.....	.....	.....	.....
Fairfield	118	169 50	132 00	130	65 00	64 00
Fayette .....	.....	.....	.....	.....	.....	.....
Franklin .....	.....	.....	.....	.....	.....	.....
Fulton	70	45 45	18 05	297	40 50	22 75
Gallia .....	.....	.....	.....	.....	.....	.....
Geauga	735	92 00	89 00	.....	.....	.....
Greene	62	35 00	35 00	104	42 00	42 00
Guernsey	110	60 00	20 00	245	125 00	46 00
Hamilton	162	112 00	112 00	21	54 00	48 00
Hancock	3	13 00	8 00	229	49 00	48 00
Hardin	42	38 00	18 00	51	43 00	38 00
Harrison .....	.....	.....	.....	.....	.....	.....
Henry .....	.....	.....	.....	.....	.....	.....
Highland	56	40 00	40 00	60	.....	.....
Hocking .....	.....	.....	.....	.....	.....	.....
Holmes	62	18 50	13 50	164	30 10	23 25
Huron	4	34 00	50	39	20 00	18 00
Jackson .....	.....	.....	.....	.....	.....	.....
Jefferson	107	58 00	28 40	526	75 00	58 62
Knox .....	.....	.....	.....	.....	.....	.....
Lake .....	.....	.....	.....	.....	.....	.....
Lawrence	18	18 90	5 90	268	44 80	37 45
Licking	18	55 00	28 00	296	78 50	64 50
Loga	176	126 50	100 30	774	21 75	114 25
Lorain	25	22 75	22 75	55	36 50	36 50
Lucas .....	.....	.....	.....	.....	.....	.....
Madison	22	43 00	24 00	230	90 75	72 50
Mahoning	250	111 00	106 00	282	38 00	35 00

TABLE II—HORTICULTURE AND FLORICULTURE—CONCLUDED.

Counties.	Flowers.			Pickles, Canned Fruit, Jellies, Etc.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	36	\$ 55 00	\$ 32 00	94	\$ 28 00	\$ 26 00
Medina	62	32 20	22 35	280	22 75	34 30
Meigs .....	..	..	..	..	..	..
Mercer	27	36 00	23 50	217	164 50	90 00
Miami	126	53 00	53 00	276	98 00	96 00
Monroe	125	30 00	10 00	60	15 00	7 00
Montgomery .....	..	..	..	..	..	..
Morgan	1	10 00	..	151	26 00	16 15
Morrow	90	75 00	25 00	500	80 00	30 00
Muskingum	9	50 00	47 25	55	10 00	10 00
Noble	7	10 50	10 06	19	19 50	15 50
Ottawa .....	..	..	..	..	..	..
Paulding	25	35 00	21 00	178	65 00	48 00
Perry	5	74 50	3 00	..	See	Fruits.
Pickaway .....	..	..	..	..	..	..
Pike .....	..	..	..	..	..	..
Portage	104	77 50	57 25	119	32 00	17 20
Preble	70	68 00	43 75	283	50 00	32 50
Putnam	50	80 00	77 00	350	..	..
Richland	24	23 00	16 50	4	14 00	14 00
Ross	62	99 00	82 00	20	17 00	13 00
Sandusky	180	60 00	56 00	504	50 00	44 00
Scioto .....	..	27 00	..	18	43 75	2 00
Seneca .....	..	..	..	..	..	..
Shelby	95	27 50	23 25	604	48 00	48 00
Stark	124	145 25	103 75	475	142 50	127 50
Summit	188	181 50	163 00	265	66 75	41 00
Trumbull	167	87 25	74 00	280	51 50	48 00
Tuscarawas	70	108 00	44 50	247	29 50	36 00
Union	60	75 00	75 00	124	49 50	49 50
Van Wert	30	15 00	15 00	513	83 00	83 00
Vinton .....	..	..	..	..	..	..
Warren	29	37 50	24 00	339	30 50	29 50
Washington	33	103 65	13 80	292	..	53 70
Wayne .....	..	..	..	140	40 00	19 21
Williams .....	..	..	..	..	..	..
Wood	120	73 50	65 00	620	48 75	48 00
Wyandot	6	33 00	5 00	200	26 00	22 00
Totals	5,984	\$ 4,178 20	\$ 3,000 63	16,776	\$ 3,209 60	\$ 2,772 82

TABLE II — FINE ARTS, ETC.

Counties.	Fine Arts.			Textile Fabrics.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	44	\$ 29 50	\$ 16 75	563	\$ 143 85	\$ 139 25
Allen	150	79 50	64 25	345	177 75	68 56
Ashland .....	...	...	...	...	...	...
Ashtabula	204	115 50	96 05	536	150 00	105 05
Athens	43	36 00	22 00	99	58 00	30 00
Auglaize	237	98 00	98 00	629	135 00	135 00
Belmont	8	23 00	5 00	134	28 00	6 00
Brown	32	10 00	7 00	318	110 00	67 50
Butler	277	197 00	193 00	1,251	475 00	475 00
Carroll	36	20 00	20 00	280	93 00	80 75
Champaign	168	68 00	65 00	305	129 00	91 75
Clark	338	328 00	313 00	305	157 00	133 25
Clermont	54	52 00	48 00	626	143 25	106 75
Clinton .....	...	...	...	...	...	...
Columbiana	14	21 00	21 00	310	98 75	93 10
Coshocton	143	128 75	82 00	342	90 50	78 90
Crawford	36	111 00	44 49	363	195 90	113 53
Cuyahoga	63	80 00	40 00	323	100 00	70 00
Cuyahoga, West .....	...	11 50	3 75	349	45 75	45 75
Darke	175	107 50	95 40	...	...	...
Defiance .....	...	...	...	...	...	...
Delaware	63	65 50	53 00	320	158 50	143 00
Erie .....	...	...	...	...	...	...
Fairfield	220	244 00	226 00	204	239 00	219 25
Fayette .....	...	...	...	...	...	...
Franklin .....	...	...	...	...	...	...
Fulton	180	102 90	74 75	751	148 55	97 90
Gallia .....	...	...	...	...	...	...
Geauga	87	45 00	40 00	624	120 00	108 00
Greene	215	65 00	57 00	820	130 00	128 00
Guernsey	35	25 00	15 00	417	177 00	85 00
Hamilton	96	181 00	170 00	180	210 00	195 00
Hancock	78	116 00	107 00	418	201 00	167 00
Hardin	40	45 00	34 00	32	50 00	45 00
Harrison .....	...	...	...	...	...	...
Henry .....	...	...	...	...	...	...
Highland .....	...	...	...	99	55 00	55 00
Hocking .....	...	...	...	...	...	...
Holmes	94	52 00	29 75	456	108 20	91 00
Huron	10	40 00	8 00	267	80 00	62 75
Jackson .....	...	...	...	...	...	...
Jefferson	76	56 00	22 52	257	115 00	62 84
Knox .....	...	...	...	...	...	...
Lake .....	...	...	...	...	...	...
Lawrence	13	31 75	10 00	80	57 65	28 95
Licking	246	204 00	168 00	436	353 00	298 80
Logan	244	284 50	197 50	935	321 75	449 20
Lorain	78	45 00	35 25	284	202 00	191 65
Lucas .....	...	...	...	...	...	...
Madison	47	64 50	32 00	212	166 25	86 30
Mahoning	137	96 00	86 00	144	37 00	37 00

TABLE II—FINE ARTS, ETC.—CONCLUDED.

Counties.	Fine Arts.			Textile Fabrics.		
	Number of Entries.	Amount Offered.	Amount Awarded.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	180	215 00	100 00	815	242 00	175 00
Medina	70	79 20	38 40	459	198 55	178 40
Meigs .....	.....	.....	.....	.....	.....	.....
Mercer	234	175 00	165 00	375	375 52	315 52
Miami	214	190 00	170 00	1,149	413 00	390 00
Monroe	150	45 00	13 00	163	36 00	18 00
Montgomery .....	.....	.....	.....	.....	.....	.....
Morgan	78	40 00	21 00	141	40 00	26 60
Morrow	50	100 00	50 00	450	196 00	145 00
Muskingum	66	173 00	101 75	74	50 00	31 88
Noble .....	.....	.....	.....	8	18 00	9 50
Ottawa .....	.....	.....	.....	.....	.....	.....
Paulding	27	39 00	18 50	150	55 00	45 50
Perry	3	27 50	2 25	35	43 50	20 00
Pickaway .....	.....	.....	.....	.....	.....	.....
Pike .....	.....	.....	.....	.....	.....	.....
Portage	19	47 25	13 00	130	68 25	41 25
Preble	174	72 00	57 00	525	110 00	101 00
Putnam	190	225 00	219 00	812	174 00	161 00
Richland	9	66 00	13 50	230	157 00	96 50
Ross	669	469 00	354 00	.....	.....	.....
Sandusky	98	100 00	45 00	766	187 00	128 75
Scioto .....	.....	.....	.....	99	154 50	71 50
Seneca .....	.....	.....	.....	.....	.....	.....
Shelby	135	90 25	62 25	370	107 90	70 05
Stark	2	Diploma.	Diploma.	445	341 75	236 75
Summit	153	153 00	111 25	346	137 00	100 30
Trumbull	213	60 00	46 50	463	127 45	125 00
Tuscarawas	122	189 00	118 00	647	156 25	127 75
Union	91	79 50	59 00	323	162 25	135 75
Van Wert	125	100 00	100 00	541	187 00	187 00
Vinton .....	.....	.....	.....	.....	.....	.....
Warren	141	107 00	76 50	701	218 75	186 25
Washington	11	109 85	8 75	129	109 85	49 05
Wayne	112	63 00	33 60	520	231 00	127 05
Williams .....	.....	.....	.....	.....	.....	.....
Wood	364	161 00	147 00	835	188 00	141 00
Wyandot	82	30 00	10 00	365	135 00	130 00
Totals	7,772	\$ 6,484 95	\$ 4,754 71	25,780	\$ 9,881 17	\$ 7,965 13

TABLE II—NON-ENUMERATED.

Counties.	Number of Entries.	Amount Offered.	Amount Awarded.
Adams	1	\$ 35 00	\$ 35 00
Allen	23	25 00	.....
Ashland .....	.....	.....	.....
Ashtabula	839	605 70	530 30
Athens	155	.....	42 25
Auglaize .....	.....	.....	.....
Belmont	12	148 00	8 00
Brown .....	.....	.....	.....
Butler	70	207 00	198 00
Carroll	150	.....	5 95
Champaign .....	.....	.....	.....
Clark .....	.....	.....	.....
Clermont .....	.....	.....	.....
Clinton .....	.....	.....	.....
Columbiana .....	.....	.....	.....
Coshocton	996	171 85	171 85
Crawford .....	.....	.....	66 19
Cuyahoga	542	156 00	106 00
Cuyahoga, West.....	.....	.....	.....
Darke .....	.....	.....	4 50
Defiance .....	.....	.....	.....
Delaware	21	79 00	46 00
Erie .....	.....	.....	.....
Fairfield .....	.....	.....	.....
Fayette .....	.....	.....	.....
Franklin .....	.....	.....	.....
Fulton	338	104 50	76 35
Gallia .....	.....	.....	.....
Geauga	35	.....	13 00
Greene .....	.....	.....	.....
Guernsey	7	100 00	58 00
Hamilton	247	350 00	350 00
Hancock .....	.....	.....	.....
Hardin	10	84 00	35 00
Harrison .....	.....	.....	.....
Henry .....	.....	.....	.....
Highland .....	.....	.....	.....
Hocking .....	.....	.....	.....
Holmes	18	21 75	15 75
Huron .....	.....	.....	.....
Jackson .....	.....	.....	.....
Jefferson	61	50 00	7 00
Knox .....	.....	.....	.....
Lake .....	.....	.....	.....
Lawrence .....	.....	.....	.....
Licking	19	41 50	28 00
Logan	84	142 50	71 50
Lorain	153	199 00	197 75
Lucas .....	.....	.....	.....
Madison	15	49 00	13 00
Mahoning	38	.....	20 00

TABLE II — NON-ENUMERATED — CONCLUDED.

Counties.	Number of Entries.	Amount Offered.	Amount Awarded.
Marion	50	.....	.....
Medina	21	.....	\$ 18 25
Meigs .....	.....	.....	.....
Mercer .....	.....	.....	.....
Miami	20	\$ 5 00	5 00
Monroe	250	.....	36 10
Montgomery .....	.....	.....	.....
Morgan	22	45 00	3 00
Morrow .....	.....	.....	.....
Muskingum	9	40 50	5 25
Noble	37	40 50	40 50
Ottawa .....	.....	75 00	54 75
Paulding .....	.....	.....	.....
Perry	2	11 50	2 50
Pickaway .....	.....	.....	.....
Pike .....	.....	.....	.....
Portage	50	125 00	85 80
Preble	67	182 50	144 00
Putnam .....	.....	.....	.....
Richland	3	30 00	30 00
Ross .....	.....	.....	.....
Sandusky .....	.....	.....	.....
Scioto .....	.....	.....	.....
Seneca .....	.....	.....	.....
Shelby	74	76 00	15 00
Stark	142	364 00	241 00
Summit	139	204 00	91 25
Trumbull .....	.....	.....	.....
Tuscarawas	194	.....	15 75
Union	71	109 00	70 00
Van Wert	53	22 00	22 00
Vinton .....	.....	.....	.....
Warren .....	.....	.....	.....
Washington	16	119 00	17 15
Wayne .....	.....	.....	.....
Williams .....	.....	.....	.....
Wood .....	.....	.....	.....
Wyandot	62	30 00	16 00
Totals	5,116	\$ 4,068 80	\$ 2,972 69

TABLE III.—RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1895.

Counties.	Amount Received from Gate Admissions.	Amount Received from Entry Fees.	Amount Received from Booth Rents and Privilege Permits.	Amount Received from Other Sources.	Amount Paid in Premiums.	Amount Paid for Real Estate Improvements.	Amount Paid for Current Expenses Other Than Premiums.	Cash Value of Real Estate and Improvements Thereon.	Amount of Indebtedness, if Any, Over and Above Cash on Hand.
Adams.....	\$ 1,380 30	78 55	\$ 252 35	\$ 1,500 35	\$ 1,207 00	\$ 1,344 28	697 90	55,000 00	\$ 1,275 00
Allen.....	2,023 20	318 75	429 00	886 84	1,940 71	126 81	1,567 62	15,000 00	3,612 00
Ashland.....	2,065 00	777 00	419 15	716 77	2,516 25	200 00	1,249 36	8,000 00	1,415 00
Ashubula.....	1,679 20	1,200 71	398 00	814 40	2,770 00	200 00	1,081 17	18,000 00	6,950 00
Athens.....	2,945 30	438 45	828 50	162 80	2,201 00	533 39	1,165 97	4,000 00	6,000 00
Belmont.....	605 90	145 00	51 00	570 42	814 24	260 71	511 82	3,000 00	1,685 00
Brown.....	2,171 10	121 00	435 95	933 50	1,618 50	735 00	1,486 72	60,000 00	16,300 00
Butler.....	7,736 00	1,385 00	2,397 00	1,229 00	8,466 00	50 00	5,938 00	6,610 00	1,380 61
Carroll.....	1,780 20	392 50	2,897 00	1,032 07	1,697 75	1,046 90	1,883 56	15,000 00	957 82
Champaign.....	3,798 65	980 20	882 50	1,948 79	3,685 50	460 60	2,992 33	50,000 00	1,410 83
Clark.....	1,974 06	1,573 55	1,312 25	2,781 50	5,146 25	75 00	1,478 46	8,000 00	5,000 00
Clinton.....	2,231 00	286 00	448 50	559 03	2,223 05	150 00	2,091 15	10,000 00	4,600 00
Columbia.....	2,157 75	332 25	426 40	926 03	1,773 75	275 88	1,634 26	25,000 00	4,600 00
Coshocton.....	3,839 75	994 34	710 25	689 85	5,301 00	1,322 11	1,322 11	10,000 00	83 18
Crawford.....	1,358 95	184 50	327 00	719 07	1,410 55	433 71	1,231 00	8,000 00	650 00
Cuyahoga.....	1,642 20	374 25	278 25	911 60	1,541 00	8,118 70	1,245 18	8,000 00	3,267 12
Cuyahoga, West.....	339 45	339 45	327 97	7,825 03	1,406 62	738 52	3,849 73	30,000 00	8,105 00
Darke.....	5,273 20	1,603 40	1,194 05	1,036 20	5,673 10	1,214 44	1,214 44	20,000 00	7,000 00
Defiance.....	1,671 06	294 30	568 10	190 52	1,448 40	500 00	1,799 50	100,000 00	1,300 00
Delaware.....	1,760 81	700 00	611 33	443 36	1,225 00	4,569 00	937 30	60,000 00	17,000 00
Fairfield.....	5,528 68	1,481 40	2,855 00	3,461 68	6,277 52	200 86	1,036 81	5,500 00	2,000 00
Fayette.....	2,179 80	301 40	418 52	913 95	1,818 10	500 00	648 00	12,000 00	8,000 00
Fulton.....	2,500 00	417 00	591 00	478 00	2,128 00	1,851 87	1,225 00	25,000 00	1,100 00
Gaucha.....	2,746 18	754 15	892 00	1,355 20	2,868 25	470 00	1,000 19	6,331 14	2,000 00
Greene.....	1,453 12	848 25	200 60	1,265 87	1,412 00	940 75	5,648 89	25,000 00	1,100 00
Guernsey.....	6,354 35	739 60	2,963 88	1,551 21	5,288 50				
Hamilton.....									

TABLE III RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1895.—CONTINUED.

Counties.	Amount Received from Gate Admissions.	Amount Received from Entry Fees.	Amount Received from Booth Rents and Privilege Permits.	Amount Received from Other Sources.	Amount Paid in Premiums.	Amount Paid for Real Estate, Buildings and Permanent Improvements.	Amount Paid for Current Expenses Other Than Premiums.	Cash Value of Real Estate and Improvements Thereon.	Amount of Indebtedness, if Any, Over and Above Cash on Hand.
Hancock	\$ 2,486 50	\$ 426 00	\$ 699 66	\$ 621 46	\$ 2,897 00	\$ 650 00	\$ 1,635 35	\$ 25,000 00	\$ 4,000 00
Hardin	1,821 50	898 00	617 25	613 25	2,250 00	980 00	980 00	15,000 00	
Harrison	1,671 60	329 75	297 50	173 51	1,571 12		787 79		
Henry									
Highland	1,900 75	215 75	311 00	71 00	1,492 50	223 66	718 10	15,000 00	1,200 00
Hocking	106 52	30 35	52 00	218 25	58 48		186 39	8,000 00	1,061 77
Holmes	690 60	690 60	196 50	569 08	2,319 50	746 46	882 96	20,000 00	1,837 24
Huron	1,425 50	51 80	75 00	343 08	291 25	260 00	248 77		2,892 00
Jackson	363 00								
Jefferson									
Knox	1,017 50	300 95	314 00	472 40	1,385 34	470 19	400 00	5,000 00	130 68
Lake									
Lawrence	330 45	199 17	31 08	552 57	619 43	275 28	216 24	1,500 00	800 00
Licking	4,758 00	2,174 63	1,805 30	1,738 11	6,596 40	500 00	2,837 64	75,000 00	5,533 00
Logan	3,925 90	500 75	1,095 50	1,581 03	3,955 85	690 00	1,683 48	18,000 00	8,742 00
Lorain	3,785 98	1,325 40	994 00	9 00	2,822 21		4,218 80	15,000 00	458 63
Lucas									
Madison	3,142 67	1,688 42	980 75	489 67	3,897 85		2,213 53	7,000 00	400 00
Manion	4,318 00	599 20	913 00	673 61	2,623 75	2,011 62	1,771 23		
Marion	3,250 00	400 00	1,110 00	400 00	3,650 00	100 00	1,350 00	20,000 00	11,000 00
Medina	2,495 00	387 00	397 00	298 08	2,890 35	177 89	951 44	7,500 00	5,500 00
Mercer									
Miami	3,928 40	541 55	1,374 33	1,846 80	3,610 62	1,936 75	2,091 54	30,000 00	2,000 00
Monroe	4,739 91	1,113 30	1,131 10	2,531 64	4,973 50	1,651 26	1,570 50	25,000 00	
Montgomery	1,526 03	171 50	113 50	352 62	991 10	40 70	914 47	4,000 00	1,500 00
Morgan	936 68	285 50	119 00	351 43	1,058 30	175 00	717 37	6,000 00	3,000 00
Morrow	2,313 00	707 40	589 00	373 60	2,000 00		1,310 40	5,000 00	
Muskingum	3,365 15	1,231 30	1,313 35	2,011 22	3,598 60	2,100 00	2,862 20	15,000 00	2,950 00
Noble	321 80	207 55	207 55	373 51	373 51	243 52	282 20	2,500 00	109 00
Oneida									
Paulding	1,566 70	469 00	883 00	250 32	1,822 50		887 52	2,500 00	

Perry	964 25	654 26	422 00	1,254 54	1,275 00	2,041 78	484 37	2,041 78	961 21
Pickaway	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pike	1,660 25	561 80	380 00	994 94	1,322 40	219 09	1,400 79	10,000 00	5,000 00
Preble	3,506 20	1,754 53	589 40	266 50	2,750 75	1,315 00	2,710 31	8,000 00	.....
Putnam	3,971 05	1,985 25	1,055 25	1,420 05	3,021 50	75 15	2,088 46	30,500 00	1,313 47
Richland	1,521 18	762 20	530 00	385 00	2,020 00	199 00	1,218 89	25,000 00	1,037 44
Ross	4,485 19	1,796 25	1,107 85	905 77	3,851 10	.....	4,143 96	.....	.....
Sandusky	3,318 95	905 75	606 00	871 27	2,020 25	135 23	2,062 99	.....	1,800 00
Scioto	2,293 95	1,469 45	1,283 50	829 15	3,899 00	.....	2,143 08	5,000 00	2,800 00
Seneca	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shelby	2,807 40	573 40	892 20	98 23	2,462 85	164 81	1,400 74	20,000 00	7,500 00
Stark	2,022 80	890 45	837 50	3,633 28	3,885 00	949 31	2,552 23	45,000 00	7,650 00
Summit	6,723 92	1,263 81	1,657 00	2,446 41	4,448 25	1,046 92	6,517 49	60,000 00	15,000 00
Trumbull	2,242 40	931 30	943 40	76 00	3,013 00	30 43	1,225 02	17,500 00	8,000 00
Tuscarawas	1,518 80	238 75	2,783 70	.....	2,127 10	829 65	1,708 23	21,000 00	6,500 00
Union	2,980 70	428 50	903 00	.....	3,543 51	333 25	2,761 27	15,000 00	1,695 54
Van Wert	4,261 55	535 10	1,051 57	965 09	4,285 88	411 85	2,122 40	10,000 00	973 82
Vinton	.....	.....	.....	.....	.....	.....	.....	.....	.....
Warren	2,872 92	973 15	827 00	1,267 36	3,291 50	64 99	2,578 34	10,000 00	1,047 00
Washington	1,325 25	222 50	778 50	634 00	.....	164 57	2,917 14	15,000 00	4,000 00
Wayne	1,829 35	894 84	198 60	823 27	2,170 84	214 30	1,386 59	3,500 00	.....
Williams	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wood	5,328 65	1,491 50	1,478 50	227 75	5,350 00	1,200 00	1,776 00	21,000 00	.....
Wyandot	1,129 00	165 00	237 00	504 00	819 00	318 00	911 00	.....	.....
Totals	\$ 181,732 67	\$ 48,724 35	\$ 54,185 20	\$ 70,648 84	\$ 189,236 68	\$ 45,416 35	\$ 122,620 11	\$ 1,153,032 92	\$ 196,949 42

PROCEEDINGS
OF THE
FIFTY-FIRST ANNUAL SESSION
OF THE
Ohio State Agricultural Convention,
STATE SENATE CHAMBER,
COLUMBUS, OHIO, JAN. 16, 1896.

The convention was called to order at ten o'clock A. M. by the president, Mr. A. J. Clark, and prayer was offered by Rev. C. L. Winget, of Columbus.

PRAYER.

We are grateful, Holy Father, for this auspicious morning. We are grateful for Thy care that hath kept us during the past; for the manifestations of Thy love to and interest in Thy children; for the wonderful provisions for their comfort, and we come with words of gratitude, of praise and thanksgiving for all the gifts Thou hast bestowed upon us. We thank Thee, our Father, that our lines have fallen in pleasant places and that we have a goodly heritage. We thank Thee for our great Ohio and for its abundant resources. We thank Thee, our Father, that Thou hast provided for the comfort of all Thy creatures, and that Thou hast called us to be co-workers together in bringing all these great resources into use. We thank Thee, our Father, for the fertility of the soil, for the seed time and the harvest, and we pray that Thou wilt give wisdom and energy to those whose duty and pleasure and profit it is to till the soil. May they go forth with determination and with understanding and a purpose to carve out of these things that which may make us still greater and yet bring us under obligation to Thee, our God. We pray Thy blessing, Holy Father, upon those who are here assembled, that they shall be led by Thy Spirit to work in harmony and then we know all things shall work together for our good. We pray, Holy Father, that Thou wilt lead the husbandmen of this state and land to understand their relations to things about them and their relation to our God, and that they are helpers without the sunshine and the shower which God hath provided. We thank Thee for a disposition to use the things which God hath provided. We can create nothing ourselves; we can only use the things which God hath given.

We ask Thee, our God, that Thou wilt advance the interests of our great state. While we thank Thee for the past, we look forward to greater things, and we know these will come to pass when men shall submit their wills to Thine and be led by Thee. We pray Thy blessing upon the body that meets regularly in this place. May they so legislate that all the interests of the commonwealth shall

be advanced. Wilt Thou bless the Governor of this great state in his arduous duty. Give him great discernment that he may do the best thing for all the people. We pray that Thou wilt bless this session and all in attendance here, and that Thou wilt attend their labors and efforts that whatever they may do may redound to the glory of God. Take us into care divine, lead us in the plain path of righteousness, and when our work on earth is done, may we have done it so well that we shall be crowned kings and priests unto God, having received the word of our Father, Well done, good and faithful servants, and Thy name shall have praise and honor and glory through Jesus Christ, our Lord.

President Clark: Following the program, the next in order will be an address by Governor Bushnell. As he is not in the room, I will appoint as a committee to wait upon the governor and escort him to this chamber Capt. J. C. Bower, of Columbus, Senator J. H. Morgan, Guernsey county, and Mr. C. H. Ganson, Champaign county.

The committee immediately retired from the Senate Chamber and shortly returned accompanied by Governor Bushnell, who was introduced by President Clark, and spoke as follows:

ADDRESS OF WELCOME BY GOVERNOR BUSHNELL.

Mr. President and Gentlemen of the State Agricultural Convention:

It gives me great pleasure to meet you this morning, and I congratulate you upon this bright sunshine and the auspicious opening of the new year.

Agriculture is the foundation of all prosperity, and as representatives of agriculture of this great commonwealth of Ohio I welcome you here to-day. True, I welcome you to your own; this all belongs to you. I am here only as a hired servant. As I said to some friends last night, it has been a good while since I worked on salary, but I do not object to that at all, gentlemen; we all know that a salary comes very handy at the end of the month in whatever department of life we may be engaged.

I think it is eminently proper that the highest legislative body of this state should adjourn for your convenience and give you their places here at these desks. You will have a good deal to do in the influencing of legislation, and it is very proper that you should come here and give some inspiration to these lawmakers who meet here every day. I hope to get some myself as time goes on, and whatever influence I may have with them or any advice that I may give them, it will be that they legislate for the people of Ohio, for you and your neighbor; and I shall say to them that the nearer they get to the people the better it will be for them and the better for the state. There is one thing we know very well, and that is if we do not have regard for the wishes of the people they will soon change their agents, put us out and put somebody else in, and it certainly is proper and right that they should do so. But I am satisfied that we are going to have and have now, a representative body in the General Assembly and that they will so legislate as shall be for the interests of the whole people of the state. If they find laws that are not in the interests of the state and that tend to drive capital and business energy from our state to enrich some other state, that they will repeal those laws, and that they will enact such as will tend to retain and attract capital, that will build up this great commonwealth of Ohio.

We have a great state, and we do not hesitate to say so. It is great in agriculture and great in other respects; but it has more farms than any other state in

the union. That may be a surprise to some of you, but statistics show that Ohio has more farms than any other state of the union. Illinois comes next, New York, Pennsylvania, and so on, and I congratulate you upon this, and I would say, never make one less, except as it may be needed for the spreading out and development of these great cities that we have, like Columbus, Cincinnati, and other cities of the state, as the territory may be needed for their enlargement. Of course I suppose we are willing to sacrifice a farm now and then where it can be laid out in town lots to good advantage, but I would not diminish the number except for that purpose.

Now, gentlemen of the convention, I know you will not expect me, and I know it would not be your pleasure for me to detain you very long, because you have business of more importance than to listen to me. I am very glad to be with you this morning and it is a great gratification and pride to me to have the privilege of welcoming you to the capital city. I say to you that I have very high regard for the farmers of Ohio, and so long as I may have any share in this city or state you will always be cordially welcomed here; I shall always be glad to see you.

I hope and believe we are now entering upon a period of prosperity again. I know that there has not been anything very promising or profitable for farmers in the past few years, but I hope the time has come and I believe it has, when their business like the other branches of business of the state will be more prosperous than it has in the last two or three years. I thank you for your attention, and hope and have no doubt but your deliberations here will be of benefit to you as individuals and to the farmers of the state. I wish you a pleasant time, a safe journey home, and health and prosperity and happiness this year and for many years to come. (Great applause.)

The President: The secretary will please call the roll of counties for the recording of names of delegates and filing of reports from county agricultural societies.

The following counties responded to the call.

LIST OF DELEGATES.

County.	Name.	Post Office.
Adams.....	Andrew P. Smith.....	West Union.
Allen.....	H. C. Adgate.....	Lima.
Ashland.....		
Ashtabula.....	Amos Slater.....	West Andover.
Athens.....	J. C. Bower.....	Athens.
Auglaize.....	J. T. Van Horn.....	New Hampshire.
Belmont.....		
Brown.....	D. R. Thompson.....	Georgetown.
Butler.....	S. K. Hughes.....	Hamilton.
Carroll.....	David Blazer.....	Carrollton.
Champaign.....	Chas. H. Ganson.....	Urbana.
Clarke.....	Chas. Stewart.....	Springfield.
Clermont.....	S. B. Myers.....	Goshen.
Clinton.....	J. S. Rainey.....	Wilmington.
Columbiana.....	H. A. Halverstadt.....	Leetonia.
Coshocton.....	W. S. Miller.....	Coshocton.
Crawford.....	B. Beal.....	Bucyrus.
Cuyahoga.....	J. P. Thorpe.....	Chagrin Falls.
West Cuyahoga.....	J. E. Ashling.....	Berea.
Darke.....	J. M. Brown.....	De Lisle.

LIST OF DELEGATES—CONTINUED.

County.	Name.	Post Office.
Defiance.....	A. J. Harter.....	Delaware.
Delaware.....	S. C. Prout.....	Prout.
Erie.....	J. Claypool.....	Hooker.
Fairfield.....		
Fayette.....	S. Taylor.....	Columbus.
Franklin.....	L. G. Ely.....	Fayette.
Fulton.....		
Gallia.....	P. W. Merriman.....	Burton.
Geauga.....	J. W. Pollock.....	Cedarville.
Greene.....	V. S. Craig.....	Washington.
Guernsey.....	D. L. Sampson.....	Silverton.
Hamilton.....	M. C. Grear.....	Mt. Blanchard.
Hancock.....	Albert Rummel.....	Kenton.
Hardin.....	S. C. Dickison.....	Cadiz.
Harrison.....		
Henry.....		
Highland.....		
Hocking.....	A. B. Critchfield.....	Millersburg.
Holmes.....	A. C. Williams.....	Monroeville.
Huron.....		
Jackson.....	A. L. Sutherland.....	Jefferson.
Jefferson.....		
Knox.....		
Lake.....	M. L. Whitten.....	Proctorville.
Lawrence.....		
Licking.....	Banner M. Allen.....	Bellefontaine.
Logan.....	J. L. Reed.....	North Ridgeville.
Lorain.....	Thos. Crofts.....	East Toledo.
Lucas.....	C. A. Wilson.....	London.
Madison.....	B. P. Baldwin.....	Tiger.
Mahoning.....	A. H. Kling.....	Marion.
Marion.....	F. A. Branch.....	Medina.
Medina.....		
Meigs.....		
Mercer.....		
Miami.....	W. I. Tenney.....	Troy.
Monroe.....		
Montgomery.....		
Morgan.....	John G. Walker.....	McConnellsville.
Morrow.....	W. O. Thumey.....	Schaucks.
Muskingum.....	S. A. Baldwin.....	Zanesville.
Noble.....	David Miller.....	Caldwell.
Ottawa.....	Henry Bredbeck.....	Port Clinton.
Paulding.....		
Perry.....	B. B. Wright.....	New Lexington.
Pickaway.....		
Pike.....		
Portage.....	Wm. Bergin.....	Ravenna.
Preble.....	F. M. Davisson.....	West Manchester.
Putnam.....	A. L. Paul.....	Ottawa.
Richland.....		
Ross.....	J. W. Clark.....	Chillicothe.
Sandusky.....	J. F. Robinson.....	Fremont.
Scioto.....	Theo. Doty.....	Portsmouth.
Seneca.....	J. T. Robinson.....	Rockaway.
Shelby.....	H. Guthrie.....	Sidney.
Stark.....	S. A. Conrade.....	Massillon.
Summit.....	J. W. Kreighbaum.....	Lake.
Trumbull.....	Jno. J. Sullivan.....	Warren.
Tuscarawas.....	U. C. Deardorff.....	Canal Dover.
Union.....	C. S. Chapman.....	Marysville.

LIST OF DELEGATES—CONCLUDED.

County.	Name.	Post Office.
Van Wert.....	J. S. Stukey.....	Van Wert.
Vinton		
Warren.....	Huse Bone.....	Lebanon.
Washington		
Wayne	Chas. E. Thorne.....	Wooster.
Williams		
Wood		
Wyandot		

Mr. P. B. Baldwin: I move that the sergeant-at-arms of the Senate be requested to act as sergeant-at-arms of this convention. (Motion carried).

The president then delivered the following address:

ADDRESS BY PRESIDENT A. J. CLARK, OF CAMBRIDGE, O.

Gentlemen of the Fifty-first Annual State Agricultural Convention:

We have met to-day in compliance with the Statutes of Ohio, and it becomes my duty as well as my pleasure, to welcome you as delegates and preside over your deliberations, which I trust will be fraught with interest to yourselves and benefit to the great and important constituency you represent.

A custom established by my predecessors, requires from me, at this time, some reference to the work in which we, as farmers are engaged, and some account of the stewardship of your executive body, the State Board of Agriculture, and I shall be so brief as not to delay long the proceedings of this body or the deliberation of vitally important subjects you may have to present.

We come together to-day, representing no political party or lines, no sect, no nationality, no individual. We are agriculturists in the broadest sense of the term and to agriculture must all these bow. Agriculture is willing to bear all its just responsibilities to these and to the state, and nation, but demands its full and just proportion of attention, and to this end should we voice our sentiments in strong and meaning terms, to be followed by local and personal effort in securing that which shall advance and protect our interests and benefit thereby, the people and the state.

Agriculture is the great reservoir that feeds and keeps alive every industrial river, stream and rivulet that permeates the land, and if the reservoir is neglected, the streams become affected and must immediately or eventually suffer. We must protect the fountain source of supply and when there is dumped into it, by bad management, by a lack of proper knowledge of methods or a want of protection and encouragement, that which impedes its progress, a remedy must be applied and an extra guard placed on duty.

For some time agriculture has been groaning under a heavy burden, occasioned by short crops or low prices and the too heavy drains of some interests to which it is tributary. Taxation, debt and interest cannot be met with present prices and cost of marketing our products, hence the strictest economy must be observed, the best methods of culture and growth adopted and the best ideas

infused into the agricultural minds, and by them transmitted to other interests and to the powers who regulate affairs.

The several lines of agricultural work as conducted by your board during the past year, has, I feel sure, resulted in contributing much to our various interests and has been met with appreciation and approval by the people. The farmers' institutes, which by law are placed in charge and under the direct management of your board is a feature of its work that has been yearly growing and at present taxes the greatest energies of the department to equally distribute the institutes throughout the counties of the state and furnish lecture talent suitable to the diversity of our agriculture. The institutes have, as a rule, been largely attended and great interest has and is being manifested by farmers in this means of agricultural education and enlightenment. Not simply interest in the lecturers sent out by the board, but interest in the discussions brought out by local talent and interest in the interchange of experiences and experiments by the farmers, breeders and others who attend the institutes. A combination of ideas and practical results, crystallized in these meetings, is carried away for every day use bringing about improvement in every department of the farm and profit, where profit is possible to be secured by a thorough knowledge of the best and most economical modes of farming, at the same time tending to lighten our burdens and elevate the profession of farming.

The demands for these institutes, cannot be fully met with the means at the command of the board, but in the distribution, as many as were possible to be held, were arranged for and it has been the earnest aim to place them in localities of each county, where, from the best evidence and information presented to the board, they would serve the greatest good. There have been some disappointments from localities not receiving an institute assignment, but this is unavoidable, and will be until the means provided the board for this work, shall be increased.

By the most rigid economy, and close cutting of every corner, the board has for this season's institutes, been able to assign and arrange for one hundred and fifty- seven, and they are distributed over every county of the state, with but one single exception. Four separate circuits are now in operation, in other words, four institutes are held each day in different portions of the state, from the opening of the season, December 1st, until the close, March 1st. Thirty-five lecturers are sent out by the board, and their subjects are as various as the various interests involved, each institute selecting from the reportare of the lecturers assigned, the subjects in which they or the locality are most interested or that is demanding attention. The farmers institutes as held in Ohio, are doing a good work for the people, being commended and sought after by every farming community.

Another line of important work as conducted by your board, is the inspection and analysis of commercial fertilizers, a work most important to the protection of farmers in the purchase of commercial fertilizers and a protection to honest manufacturers and dealers in the sale of their goods. Under the law and the methods of inspection as carried on by the secretary of your board, every commercial fertilizer sold or offered for sale in this state, is inspected and analyzed and the names of the brands and the ingredients as found in each, together with the commercial value of each ingredient and of the whole, published in pamphlet form for general distribution, that farmers may know what they are paying for in the purchase of goods. But for this protection, the greatest fraud would be possible and the good results sought by the use of fertilizers would, in many cases, be totally lost, as well as the money expended in the purchase. Unlike other articles of farm use, the value of commercial fertilizers cannot be judged from appearance, weight or condition. Only by the aid of chemistry can their value be known, and this the board supplies in the most careful manner. The purpose

of the inspection is not to teach farmers what ingredients are required for their particular soil, but when they themselves have determined what is required for their soil or for any particular crop, to then afford them positive means of knowing that in their purchases, they are securing what they aim to secure. The fertilizer work is an important one and is receiving the best attention that earnest effort and the science of chemistry can afford.

Still another line of work as conducted by your board, is the collection, collation, publication and distribution of monthly reports bearing on the acreage, condition, prospect and result of the principal crops of the state, the object being to afford to farmers, during the growing and harvest seasons, the best and most reliable information possible to be secured. In the manipulation of this work, the board has a corps of about fifteen hundred correspondents, who report monthly, the observations as made in their respective localities. These observations or reports are then summarized by townships, by counties and for the state, and from the results are estimated the acreage, condition or result of the crops respectively reported upon.

It has been said by some persons, that these reports are in the interest of grain speculators. Not so, any more than any general information is of value to those seeking or desiring information. Were it not for these state reports, everything would be in favor of the grain buyers or speculators, who have their paid agents and experts, scouring the country for information relative to crops, which, when secured, is not heralded to the farmer or public generally, but rather is securely guarded in their own circle to be distorted perhaps to suit their own speculative convenience and enable them to take advantage of the producer, who would not know the true state of crop conditions for himself, until the buyer's own individual aims had been secured. The farmer with equal or better information than is possessed by the buyer or speculator, knows for himself whether there is a shortage or abundance in any crop and can then intelligently act upon his own judgment in the disposition of his crop. The means is at hand, if the farmer will not avail himself of the information, it is his fault, rather than the fault of the work and he may suffer only by his own negligence in not accepting the information furnished, and which is strictly in his interest. Except for this crop information as furnished by your board, the only means of knowing the result of crops would be from the returns made to the county auditors by the township assessors throughout the state, and as these are only secured the year succeeding that in which the crop is grown and not prepared for publication until several months later, the information is nearly two years old when ready for the public and the crops being long since disposed of and forgotten, the information becomes of no material benefit or value, except as a matter of record. The reports as prepared and published by your board, are valuable for present use and are in the interest of the producer direct, in just so far as he will avail himself of the information furnished.

Still another important work of your board, and one with which you are very familiar, is the management of the State Fair and Industrial Exposition. We are to-day more than ever appreciating the magnitude of our fairs. The bringing together of the best products of the soil and orchard, the height of perfection in farm animals, the skill and ingenuity of the mechanic and inventor, the advanced ideas in household conveniences and attractions, the beauties in art and the result of scientific investigations, are attracting the best minds and diffusing knowledge, that more than anything else is assisting in every advance step taken in the improvement of our farm and industrial interests. In these important respects, the fairs of the state occupy a place that cannot be supplied by any other school or agency and must therefore be ranked as educational institutions and

managed and treated as such. We should banish forever, every idea that would stamp our fairs as merely annual frolics of fun and amusement and consider them rather as what they are or should be, feasts of reason and colleges of general instruction, then will good results accrue that will be lasting and not confined simply to the week of the fair.

Taking this broad educational view of our fairs, how necessary it is that they should be kept clean and pure, void of all that is not elevating or practical in tendency. I need not refer to the objectionable features that find their way into some of the fairs under the guise of privileges and amusements, and excused because they seem to be a source of revenue. Let a clean sweep be made at every fair, of every feature that does not tend upward and forward. Have no excuses to make or apologies to render and let each fair stand or fall upon its own importance, relying on nothing for support or revenue that is not in line with the legitimate industries we aim to encourage and the educational features we aim to sustain.

The State Fair of 1895 was pronounced to be the most complete and extensive industrial exposition ever held in the state. Each individual member of your board labored hard and earnestly to make it such, and we have the satisfaction of knowing that the efforts put forth and the work accomplished were appreciated by the people, and that the results have gone out, doing missionary work that will tell in favor of the agricultural and stock breeding and the mechanical and household interests of the state. During the year many improvements were made to the state property upon which the fair is held, chief among which was the construction of an electric light plant, for the purpose of illuminating the grounds and buildings and conducting the exhibitions at night the same as in the day time. The success of this movement was very apparent, and was highly approved by all patrons of the fair, as an advance step, commendable for the many possibilities it afforded.

As to the financial outcome of the fair, I will refer you to the report of the treasurer, which will be presented to the convention at the proper time.

I have referred to some of the most important work that is being carried on by your board, but there is much more in the general detail of department affairs, in the correspondence and arrangements for work that has received careful consideration and the earnest and faithful attention of the officers in charge of the department, and in this connection I wish especially to commend our worthy and efficient secretary, Mr. W. W. Miller, for the excellent manner in which he has taken hold of the agricultural work, and the success with which he has met in bringing the department in closest touch with farmers and the interests affecting us as such.

The work of our Ohio Department of Agriculture is yearly increasing. As its scope is broadened, the demands become greater and to meet the demands, it is right and proper that the state should furnish sufficient means to enable Ohio to do as good work and as much work for the interests represented as is done by other states for their departments of agriculture. The department has been receiving from the state annual appropriations for office work and contingent expenses a total of eight thousand eight hundred dollars, but with the greatly increasing work, occasioned by the increasing demands, this sum is insufficient to properly perform the work and fully or even fairly meet the demands, and I sincerely hope the present General Assembly will, in its wisdom, increase the amount sufficient to enable the department to extend the work where demanded and give to Ohio agriculture the best results possible. In addition to the regular appropriation referred to, the state has each year taken care of five thousand dollars of the bonded debt on the fair grounds, but the property has so increased in value, that the state is many thousands of dollars the gainer by reason of the investment.

It is not with a spirit of criticism or reflection upon Ohio that I make reference to the encouragement extended by some of our sister states to their respective agricultural departments, but merely as a matter of comparison and to show how greatly the work is appreciated by other states, no greater or no more important than Ohio.

Indiana appropriates, annually, the sum of ten thousand dollars toward the payment of state fair premiums, besides now making provision for the holding of farmers' institutes.

Illinois appropriates annually thirteen thousand dollars for premiums and office expenses, and ten thousand dollars for conducting farmers' institutes, and besides these has given the board two hundred and twenty-five thousand dollars toward fitting up its fair grounds and authorized the transfer of another ninety thousand dollars to state fair funds, that remained as a surplus from appropriations made by the state for the Columbian Exposition exhibit, making an outright appropriation of three hundred and fifteen thousand dollars for this one purpose.

The city in which the Illinois state fair is located gave another fifty thousand dollars and a clear title to one hundred and fifty-six acres of desirable land. It is quite evident that Illinois has a high appreciation of the agricultural work, and is not slow to substantially manifest that appreciation.

Iowa has recently given for state fair purposes the sum of fifty-nine thousand dollars. Wisconsin appropriates to the farmers' institute work about twenty thousand dollars annually; and further reference might be made to aid given by other states to the departments of agriculture for the furtherance of agricultural interests.

Ohio cannot afford to cripple or render insufficient the work of your board by withholding needed means to meet all reasonable demands upon the department and to promulgate and extend, as the people require, the good work that is now so successfully in operation, and that is accomplishing untold good to the important interests we represent.

Before closing, I wish to extend thanks to the individual members of the board for the cordial support given in all our work and for the earnest manner in which they, as your representatives and the representatives of agriculture, have transacted the business entrusted to them. I wish also to commend the good services rendered by the secretaries of the board and the able manner in which they have conducted the affairs of the department.

Gentlemen of the convention, I thank you for your attention, and await your pleasure in the business that may come before us.

President Clark: The next thing in order will be the report of the treasurer of this association, Mr F. A. Derthick.

REPORT OF TREASURER.

ANNUAL STATEMENT SHOWING THE FINANCIAL TRANSACTIONS OF THE OHIO STATE BOARD OF AGRICULTURE FOR THE FISCAL YEAR ENDING DECEMBER 1, 1895.

The following statement represents the financial transactions of the board for the fiscal year, ending December 1, 1895, also the general financial condition, as summarized from the several itemized journal and ledger accounts.

Receipts are charged to the treasurer and the respective state appropriation funds and all disbursements have been by checks or orders, signed by the president and secretary, as required.

The statement sets forth all cash balances from last year and the balances remaining in the several funds, at the close of the present year, all of which, with the liabilities as stated, gives a complete showing of the present financial condition of the board.

Respectfully submitted,

F. A. DÉRTHICK, *Treasurer.*

RECEIPTS.

FROM STATE APPROPRIATIONS.

Balance from last year in fund for the encouragement of agriculture	\$1,227 32
Balance from last year in fund for weather and crop service	439 93
Balance from last year in appropriation for payment of bonds and interest.....	8,000 00

APPROPRIATIONS FOR 1895, AND FIRST QUARTER OF 1896.

For the encouragement of agriculture.....	\$6,000 00
For contingent expenses.....	1,000 00
For expenses of weather and crop service.....	1,800 00

Total from state appropriations.....	\$18,467 25
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FROM MISCELLANEOUS SOURCES.

Balance in hand of treasurer at close of last year.....	\$345 54
From county farmers' institutes, on account of per capita collections	5,269 88
From fertilizer license fees.....	10,120 00
From sale of hay.....	175 01
From rent of house on fair grounds.....	42 50
From stall rents.....	50 00
From sale of mailing tubes.....	5 00
From payment by B. & O. R'y Co., subscription to guarantee bond for state fair of '93.....	273 50
From borrowed on the board's note to the Hayden National bank, dated October 21.....	1,000 00
From borrowed on the board's note to same, date November 25.....	1,000 00
From Neil & Co., on account of roof measurement.....	3 00

Total miscellaneous.....	\$18,284 43
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PROCEEDS OF STATE FAIR.

From sale of single admission tickets.....	\$20,945 00
From sale of children's tickets.....	448 59
From sale of grand stand tickets.....	2,631 65
From sale of exhibitors' tickets.....	630 00
From sale of wagon tickets.....	62 00
From sale of special tickets.....	63 00
From entrance fees.....	3,839 55
From sale of privileges.....	3,847 40

From subscription to electric light plant.....	\$1,395 00	
From American Trotting Association, collections.....	32 10	
From W. B. Smith & Son, account of milk test.....	50 00	
From surplus advertising fund.....	8 20	
From excess, ticket department.....	4 73	
		<hr/>
Total state fair.....		\$33,966 13
		<hr/>
Grand total receipts from all sources and funds.....		\$70,717 81

DISBURSEMENTS.

For old outstanding checks redeemed.....	\$9 50
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STATE FAIR ACCOUNTS.

Expense of horse department.....	\$267 45	
Expense of cattle department.....	147 30	
Expense of sheep department.....	78 25	
Expense of swine and poultry department.....	191 70	
Expense of machinery department.....	262 14	
Expense of farm product, fruit and flower department....	224 05	
Expense of mechanics' and manufacturers' department....	90 00	
Expense of woman's and fine art department.....	591 60	
Expense of secretaries' department.....	273 40	
Expense treasurer's department.....	401 00	
Meals.....	507 86	
Premiums.....	15,084 35	
Refund entrance and tickets.....	56 25	
State fair printing and advertising.....	4,008 93	
State fair labor and assistance.....	2,058 84	
State fair material and supplies.....	998 08	
State fair expense of members.....	263 45	
		<hr/>
Total fair accounts.....		\$25,504 65

GENERAL OR MISCELLANEOUS ACCOUNTS.

Bond redemption.....	\$5,000 00	
Expense of members.....	2,079 79	
Express and freight.....	222 40	
Fair ground improvements.....	12,693 49	
Farmers' institute expense.....	4,992 01	
Fertilizer inspection and analyses.....	4,590 39	
General printing.....	169 28	
General labor and assistance.....	485 74	
General supplies.....	407 80	
Interest on bonds.....	2,100 00	
Office expense.....	316 61	
Postage and telegraph.....	520 47	
Salary of secretary.....	2,499 85	
Salary of assistant secretary.....	1,875 00	
Salary of stenographic clerk.....	900 00	

Salary, of messenger clerk.....	\$ 420 00
Salary of superintendent of fair grounds.....	450 00
Weather and crop expense.....	2,103 50
Total miscellaneous.....	<u>\$41,736 33</u>
Total disbursements as shown by checks and orders issued	<u>\$67,250 48</u>
From which deduct the outstanding unpaid checks of present year.....	<u>46 00</u>
Actual disbursements from all funds.....	\$67,204 48
Deducting the actual disbursements from total receipts from all sources and there is shown a balance cash on hand December 1, all funds.....	3,513 33
This balance consists of cash in hands of treasurer at the Hayden National bank.....	\$948 28

IN STATE APPROPRIATIONS.

For encouragement of agriculture.....	1,358 73
For contingent expenses.....	169 89
For weather and crop service.....	136 43
For payment of bonds and interest.....	900 00
Total	<u>\$3,513 33</u>

LIABILITIES.

The liabilities of the board are for:	
First mortgage bonds outstanding.....	\$30,000 00
Notes and certificates of indebtedness.....	3,262 50
Outstanding checks for 1895.....	46 00
Outstanding unpaid checks of former years.....	343 20
Total	<u>\$33,651 70</u>

PROPERTY VALUE.

State fair grounds, buildings and improvements, figured at cost, up to close of last year.....	\$274,104 68
Cost of improvements made during 1895.....	12,693 49
Total cost value December 1.....	<u>\$286,798 17</u>
This property value being in excess of all liabilities.....	253,146 47
There is still due the board, on old guarantee bond to state fair of 1893, from C., S. & H. and S. & C. S. L. R'ys.....	\$273 50
From Columbus Hotel Keepers' Association on its subscription to electric light for state fair of 1895.....	150 00
Total	<u>\$423 50</u>

The report of the auditing committee was then submitted as follows:

REPORT OF THE AUDITING COMMITTEE FOR THE BOOKS
AND ACCOUNTS OF 1895.

Ohio State Board of Agriculture:

Gentlemen: The undersigned committee, appointed to examine and audit the books and accounts of the board, submit the following report:

In the performance of our duty, we had before us all the books, vouchers, checks and orders, connected with the financial transactions, and upon careful examination of the same, we found the receipts and disbursements properly accounted for and correctly vouchered. The receipts from the several sources, we found to be correct as set forth, embracing in the aggregate seventy thousand seven hundred and seventeen dollars and eighty-one cents.

In the journal is recorded the various items of expense and a comparison of each entry, with the check or order issued in payment and the voucher upon which payment was made, shows them to be correct and to properly tally. All payments have been made upon approved vouchers or by order of the board, and all checks and orders issued, have been signed by the officers as required.

The total expenditures were as set forth, sixty-seven thousand two hundred and four dollars and forty-eight cents, leaving a balance, as shown, of three thousand five hundred and thirteen dollars and thirty-three cents. Of this balance, only the amount in treasurer's hands, nine hundred and forty-eight dollars and twenty-eight cents, is available for state fair and other general expense, the balance being in state appropriations and can only be expended for the purposes for which appropriated.

We find that during the year there was expended for improvements on the State Fair Grounds the sum of twelve thousand six hundred and ninety-three dollars and forty-nine cents, the principal part of this expenditure being for the erection of an electric light plant, which is paid for in full. Adding the expense of improvements for 1895 to cost of grounds and improvements up to 1895, and there is shown as set forth, a total property value of two hundred and eighty-six thousand seven hundred and ninety-eight dollars and seventeen cents.

The state fair receipts for 1895 we found to be thirty-three thousand nine hundred and sixty-six dollars and thirteen cents, and the current expenses of the fair twenty-five thousand five hundred and four dollars and sixty-five cents, showing the earnings of the state fair of 1895, over current expenses, to be eight thousand four hundred and sixty-one dollars and forty-eight cents, which earnings have gone into the permanent improvements made during the year and which cost four thousand two hundred and thirty-two dollars and one cent, over and above the fair earnings.

The outstanding bonds and other liabilities of the board are correctly set forth in the records.

In our examination of the books and accounts, the work was facilitated by the plain and systematic manner in which the records have been kept, and by the clear and complete summary of the various accounts.

N. OHMER,
J. T. ROBINSON,
C. BORDWELL,
Committee.

President Clark: Next will be the appointment of various committees. How shall they be appointed?

On motion the Chair was instructed to appoint committees.

Thereupon the following committee on resolutions was appointed: Col. J. H. Brigham, of Fulton county; C. S. Chapman, of Union county, and A. C. Williams, of Huron county.

Committee on credentials: Hon. A. H. Kling, of Marion county; O. S. Craig, of Guernsey county, and George W. Carey, of Warren county.

President Clark: The next business before the convention will be the nomination of candidates, five of whom are to be elected as members of the State Board of Agriculture.

Mr. C. H. Ganson, Champaign county: I do not expect to make a speech, except to perform a duty. The state fair of 1895 was a success financially. The society handled it wisely and well as a rule, and I am in favor of two terms for good men, and I do not think any man we nominate will need any eulogy. I nominate for a second term, Mr. J. H. Pringle, of Morrow county.

Dr. Norton, Seneca county: If the chair will indulge me for a moment I will discharge what to me is a very pleasant duty. I beg to present a name from Seneca county. A man who stands wide across the border from me politically, but it seems to me that all the world stands across the border from me, for I am a democrat (laughter). But in my county there has lived a boy and a man who has made for himself a record of honor, of integrity and of fidelity, not only to his friends, but to every trust that has been placed in his hands. Joseph T. Robinson has earned the respect of our people, and I believe, Mr. President, that he has earned the respect of those with whom he has been associated during the past two years. Faithfully, honestly and intelligently he has guarded every trust that came into his hands, that we have entrusted to him, with marked ability and with credit to himself, and which has endeared him to the people. And we come to you asking that you will again honor him with a second term, and we believe that he will as faithfully perform the duties that fall upon him as he has in the past. I ask this in the name of every citizen irrespective of creed or party in my county.

Mr. E. W. Porter, Union: Mr Chairman and gentlemen, I have the honor to submit as a candidate for member of the State Board of Agriculture a man who is eminently fitted by training and experience for a position on the board. He is a practical and successful farmer; a man who is so well thought of at home that he is now, and has been for the last twelve years, a member of our county Board, who for four years has been its president and who is just now finishing his first term as a member of the State Board of Agriculture. For these reasons and because it is just and right that all faithful, hard-working, competent mem-

bers of the board should be re-elected, I place in nomination Mr. G. Liggett, of Union county.

Col. J. H. Brigham, Fulton: I regard a position on the State Board of Agriculture as one of very great importance to the agricultural interests of Ohio. It is possible for this Board to render great service to the farmer or to neglect to render such service. I desire to present the name of a man who has been all his life a practical farmer and a successful one. He has been for many years the president of the local fairs in Fulton county, and some of you know of the public spirited service which is required of presidents of county societies. For twelve years in succession he has been president of that society and it has grown under his administration from a weak society to one of the strongest societies in counties of that size. He is a thorough-going, practical man in every sense of the word. He served one term on the State Board of Agriculture a few years ago, or nearly completed one term, when his fellow-citizens, recognizing his ability to serve their county acceptably, nominated and elected him a member of the General Assembly, and as a member of that Assembly he served as a member on its most important committee, that of finance, and there he rendered very important service to the farmers and all the interests of Ohio. He was recognized as one of the ablest and best members of the committee, and I believe on the State Board of Agriculture, with his experience in fair associations at home and on the State Board, and with his experience in the Legislature, he can be of great service to the farmers of the state. I nominate Hon. L. G. Ely, of Fulton county.

Senator Johnson: Mr. President and gentlemen of the convention:— You are now participating in one of the most important duties that would be your pleasure to continue for a while. It is the duty of selecting members who will sit in consultation and deliberation of great agricultural interests of the State of Ohio. But a few years ago, the northwest, known as the northwest Ohio, was considered of but little importance to this grand commonwealth on account of its huge forests, its mud and its water, but by determined will with united effort and labor and skill it has become the garden spot of Ohio. When you glide over this fair land, either upon its pikes or railways, and view its beautiful arable and pasture lands abounding in luxurious vegetation, and the fine stock, no man can but hail Northwest Ohio. It is your duty to select just, judicious, careful, candid and conscientious men to perform the duties devolving upon members of the State Board of Agriculture. Not only that, but in justice and fairness and equity to this great commonwealth, you should equally distribute these offices. The northwest, I say, has been brought out by that hard, skillful and unflinching hand of the yeomanry of the country which I see sitting upon every hand here. That is the foundation of the fruitfulness of our grand country. It is made up of such men as are not only first in the ex-

perjence of farming, but who are interested in societies like this, men who in their careful training and deliberation stand foremost in the legislation of our state. I have known the gentleman whose name I am to second, not only as a farmer, as a citizen, as a man who has stood shoulder to shoulder in the hard battles of warfare that the farmers have to meet and contend with, but I have known him in the 71st General Assembly, a man who stood there not only in the interests of farming, but by his ability and skill was placed upon the most important committee of the lower house of this legislature, that of finance. Any of you who know anything about legislation, know that that is the most responsible position that there is in any legislative body. Therefore, knowing the ability of Mr. Ely of Fulton county, I heartily second his nomination and commend him to you, full well knowing that you will make no mistake by electing him.

Mr. S. H. Ellis, Warren county: I heartily agree with every proposition that has been made by the speakers in advance of me in eulogizing the necessity of having practical men on this Board, but, Mr. President, you cannot run amiss on that line. And let me tell you a compliment that was passed on you a while ago. A few minutes ago the president of one of the Ohio universities came into the room and sitting down by the side of another president of an Ohio university, and not knowing that this was the agricultural convention in session says, "I tell you, the Ohio Senate is composed of a lot of sturdy looking fellows" (laughter).

Now, that is true. We are not senators, but we are here as farmers; not supreme judges, but farmers. Now, I wish to put in nomination a man who is very familiar to all of you, and a man who has stood for these many years, ever since the death of Dr. John A. Warder, that all of you men love to honor as the head of the Horticultural Department of Ohio; and the name is here recommended by the last meeting of the State Horticultural Society by unanimous vote recommending this body to elect him to membership upon this State Board of Agriculture. Now, I need hardly name the man; you all know I mean Nicholas Ohmer, of Montgomery county. In this state where we need so much more attention paid to horticulture, where we have been raising corn and wheat and potatoes and neglecting the fruits, we certainly ought to have a representative man of horticulture upon the state Board of Agriculture to look after the horticultural interests of the state. I nominate Mr. Nicholas Ohmer, of Dayton, Ohio.

Mr. Draper, of Scioto: I wish to present the name of a man for member of the State Board, and I will do so in very few words, and I wish to give my reasons for doing so. It has been suggested that the state is a broad commonwealth, very extensive. I come from the southern part of the state, Scioto county, and if you will glance over the list of the present board you will find that the southern quarter of the

state has been very little represented. We are here to present the claim of our county and that section of the state. It has been suggested by other speakers that the different parts of the state should be recognized. I wish to present the name of a gentleman who has served on this board one term. It has been advanced that it is proper, if a member serves well, that he should serve a second term. I agree with that sentiment. Our friend served one term at the end of which he was not re-elected. I have not learned any good reason why, unless it was because he did not get enough votes. I have made inquiry and ascertained that he performed his duties to the satisfaction of everybody. We know he is a live and energetic man at home. He has been a very earnest and the foremost man in our own association. He has done a great deal for its advancement and the advancement of its interests. I do not know why I should detain you any longer. I have given you what I believe candid, straightforward reasons, the geographical location, the fitness of the man and the desire on our part for his again coming into the Board. I name to you Harry S. Grimes, and ask your kindly consideration in again placing him upon the State Board.

Mr. R. H. Wallace, Ross: I rise in behalf of Ross county and the entire Scioto Valley, to heartily second the name of Harry S. Grimes for this position. I have not the disposition, had I the ability, to indulge in any oratorical pyrotechnics to-day, but simply say that Mr. Grimes is thoroughly equipped for this position, thoroughly acquainted with the agricultural interests of the state, thoroughly imbued with the spirit of agriculture. With his service as the practical head of the Scioto county fair since its organization he has been prominent in maintaining the agricultural fairs of the Scioto Valley and of all that region down there, and I am sure that I voice the sentiment, not only of Scioto county, but of the adjoining counties, when I say that no man will give greater satisfaction to all that section down there than will Harry S. Grimes, if you should elect him. I therefore commend him to you for the reasons stated by Mr. Draper who preceded me.

Mr. Howard, Belmont: Mr. President:—In behalf of the eastern and southeastern part of Ohio, I want to present the name of Mr. L. P. Bailey. I do not know that I need to say a word in behalf of Mr. Bailey. He is probably known to most of you and probably all of you know of Mr. Bailey. Down our way we know him as one of those fellows who began at the bottom of the ladder and has climbed to the top. He is a splendid farmer, broadminded, liberal and fair, and he will fill this position, I venture to say, to the satisfaction of every man in this chamber. Mr. Bailey has acquired some distinction. He is secretary of the State Dairymen's Association; he is director of the American Jersey Cattle Club, which, I am informed, is the greatest cattle club in the world, and he has filled those positions to the satisfaction of everybody. Now, down in Belmont county and in that part of the state

we feel that we ought to be represented on this Board. We have no hesitation in presenting the name of Mr. Bailey, and he will have the unqualified endorsement of everybody in that part of the state.

Mr. Hinsdale, Medina: Gentlemen of the society:—I do not propose to influence you by any eloquent harangue about the candidate whose name I shall present. Being closely allied to the agricultural interests of the great State of Ohio, I come before you feeling the importance of careful consideration in the discharge of the duty which devolves upon you at this time. The election of the members of the State Board of Agriculture of Ohio is one of vast importance, to which we as farmers and agriculturists demand careful consideration at your hands. Now, there are some requisites necessary to a member of this board. In the first place he should be a man of integrity. In the second place he should be in touch and accord with the great agricultural interests of this great state of Ohio. In the next place he should be a man of business habits and training, and especially should he be a man of experience in the lines of managing agricultural associations and fairs. These things being true, I think I am able to present to you a man who will fill all these requirements. He is known throughout all that community as a man of integrity. He is practical along the line of farming and agriculture, and especially along the line of horticulture, being in his early training in the nursery and fruit-growing business, now practically engaged in general agriculture. He is a man of business experience and success. I refer to Mr. Albert Hale, of Summit county. Any one who knows about the Summit county fair association, without saying anything disparaging of any other, knows that it stands among the first in the state, and it is known not only over the state, but outside of the state as one of the great fair associations of Ohio. Mr. Hale has been intimately connected with the management of that association for a term of years. He has been the chief manager and for a long time secretary and it is largely through his influence with the hearty support of his co-laborers, that he has brought the association up to the place where it now stands. As I said before, I think I represent a man who will fulfill all the necessary requirements, integrity, honesty, experience, sympathy along these lines, a man of broad views and who knows how to sympathize and feel and take in the wants and needs of the agricultural interests of the State of Ohio, and in putting Albert Hale upon the State Board of Agriculture you will make no mistake and he will be worthy of the trust you repose in him.

Mr. J. P. Thorpe, Cuyahoga county: Mr. President:—We here have, as members and representatives of the Board of Agriculture, a deep interest in this state institution. We wish to see fairness and equity meted out to our portion of the state. I am here in the interest of a candidate to represent the northeastern part of this state. Geographically we have no man there. I understand that the old member,

Mr. Derthick, who has served us so ably, objects to his name coming up. Consequently it leaves geographically a large portion of the north-eastern part of the state without a representative on the State Board. Therefore I rise to second the nomination of Mr. Hale, knowing as I do that he is a man that you will all be proud of. You need not only practical agricultural men upon the Board, but you need a man that is versed in plant growing, and you will have that member in the person of Mr. Albert Hale of Summit county.

Mr. H. A. Halverstadt: Mr. President:—I think it would be proper and a little more businesslike to have a motion to adopt the report of the treasurer and that of the auditing committee. I therefore move that the report of the treasurer, Mr. Derthick, and that of the auditing committee be adopted. (Motion carried).

And thereupon the convention took a recess till two o'clock P. M. of same day.

AFTERNOON SESSION.

Promptly at two o'clock the convention was called to order by the president, pursuant to adjournment. Dr. W. O. Thompson, president of Miami University, was introduced and read the following paper:

CORPORATIONS—THEIR USES AND ABUSES.

W. O. THOMPSON, PRESIDENT OF MIAMI UNIVERSITY, OXFORD, OHIO.

Corporations are a public necessity—this from the standpoint of their use; from the standpoint of their abuses, they are merciless in their oppression.

If we may hope in a brief paper to get before our minds some clear conception as to the uses and abuses of corporations, it may be well to note, first of all, that they are distinctively a modern invention. In the days of our Revolutionary fathers, there was no such thing in existence. In those days there was no railroad, no telegraph, no great business enterprises, such as we see in our day. There was, therefore, no great necessity for a corporation; but with the advent of modern industry, business was compelled to adapt itself to the new conditions. The demands could not be met by individuals or by partnerships. Such a mode of business was too slow for the rapidly developing business of the nineteenth century. It never could have built a railroad, cabled an ocean, or successfully carried the nation through the civil war.

Experience has proved that the great risks to be taken in the mammoth enterprises of our day are too heavy to be borne under partnerships.

In this form of business there is no way to provide for an unbroken current of business life. The uncertainties of life itself, the inability to unite responsibility and authority, together with numerous other weaknesses, made it necessary to choose between a restricted business and a new method. Business necessity, therefore, gave rise to the corporations. Under this condition the constitutions of the several states began to make provisions for the organization of corporations.

THE CONSTITUTIONAL PROVISION.

What then is a corporation? Webster says it is "A body politic or corporate, formed and authorized by law to act as a single person, and endowed by law with the capacity of succession."

Judge Cooley, in his "Laws of Corporations," summarizes the powers and privileges of corporations as follows: "First, the power of perpetual succession of members; second, the power to sue and be sued in the corporate name, and to transact in that name all such business as is within the intent of the grant; third, to purchase, take, and hold property and to sell and convey the same except as may be forbidden; fourth, to have a common seal under which to transact its business, and to alter the same at pleasure; fifth, to make by-laws for its government, provided they be not unreasonable or inconsistent with law."

Briefly, it is an artificial person—a creature of the state, brought into existence for the purpose of doing what already existing persons cannot do, or cannot do as well as the corporation. Or, again, a corporation is an artificial person—a creature of the state, brought into existence for a definite purpose, endowed with splendid administrative ability, possessed of a good judgment, invisible, never appearing in the courts except by a representative, blest with immortality, popularly believed to be without feeling or conscience, and with no soul to be saved.

Passing now the matter of definition, it is worth our while to observe that there has been considerable progress in our legislation upon this subject. The Constitution of 1802 was very brief upon the subject and provided, "That every association of persons, when regularly formed, within this state, and having given themselves a name, may, on application to the legislature, be entitled to receive letters of incorporation, to enable them to hold estates, real and personal, for the support of their schools, academies, colleges, universities, and for other purposes." This provided, as you see, for a special act of the legislature for each separate corporation. In 1851 a considerable advance was made owing to the feeling that such enterprises ought to be encouraged and no barriers put in the way of commercial progress. The most important item in the new constitution was Section 3 of Article XIII., which provided that "Dues from corporations shall be secured, by such individual liability of the stockholders, and other means as may be prescribed by law; but, in all cases, each stockholder shall be liable, over and above the stock by him or her owned, and any amount unpaid thereon, to a further sum at least equal in amount to such stock." In the Statutes of Ohio, passed April 6th, 1894, Section 3235, we read, "Corporations may be formed in the manner provided in this chapter for any purpose for which individuals may lawfully associate themselves except for carrying on professional business." The way is thus fairly opened for any kind of a business corporation for profit. Under that law there can be no legitimate complaint about the fact of a corporation. They are clearly provided for and expected.

PRELIMINARY OBSERVATIONS.

A few preliminary observations may now be made: (1) First, the law contemplates, as all must see, that corporations have a legitimate and helpful purpose. The law may be blind to any abuses, real or possible, but it certainly presumes upon a large usefulness. This point has not always been appreciated. To abandon our corporations would be to go back to the semi-civilized condition of society. It has been said that four-fifths of all the wealth of the country is controlled by corporations. There is scarcely a single enterprise of great value to the world to-day that is not the result of corporate combination. The most roundly abused of them all—the railroad—has made it possible, for an inconsiderate sum of money, to see

this continent from shore to shore, in less time than George Washington could have visited Boston. It is usually the splendid result of a great corporation that enables you for a penny to have a photograph of the world's business on your breakfast table. The corporations of the world have united us to every land in closest commercial relations. If we are to be spared the horrors of a war with England, corporate interests will not be the least influential in bringing about the result.

(2) A second remark is, that since corporations are the creatures of the state, they have some rights not to be ignored, as well as obligations to be observed. Chief among these is protection. The state cannot, except for cause, punish its own creatures, much less do them positive wrong. It is to be kept in mind that these corporations do for the state what the state cannot do for itself and what individuals cannot do satisfactorily. Their existence is a public and commercial necessity. I am aware that men say that private corporations are organized solely for the benefit of those who contribute the property and who become its constituent members; that the state gives the franchise not for its own benefit, or for the benefit of the public, but for the sole use of the incorporators, and at their solicitation; that it receives no consideration therefor and the incorporators give none; that there is no element of contract but a mere gratuity in the grant of corporate privileges. This may be technically true. I shall not quibble on that point. I am clear, however, that there is an implied benefit in all such grants. The public interest and welfare are advanced by this means. The state is serving the people in making provision by law for such enterprises. In the case of the corporations for rapid transit in our cities, it cannot be successfully maintained that the city and the state have not been greatly benefitted—some would say even more than the individual incorporators or stockholders. I do not now say that we have not often paid too much for our benefits, that we have not often been wronged and defrauded. I only desire at this point to free our minds of the somewhat current prejudice that corporations are necessarily evil. The evil that has grown up with the growth of corporations is not an inseparable part of them. It is not, therefore, necessary to destroy them in order to rid ourselves of the abuses. The whole spirit of the law which provides for their existence is that corporations are for the public good. As such they are brought into existence and are entitled to the enjoyment of their rights. Whether they always meet the end for which they were created, or whether they do not receive more than they are entitled to, are different questions.

(3) A third remark is, that being the creatures of the state they are rightfully subject to control. The creatures should never be greater than the creator. Every child of the state is subject to the law of the state. There is no duty of the state more imperative than the control of these creations. Upon this question public sentiment has not been sufficiently aroused. Corporations are brought into existence for a specific purpose. They should be confined to legitimate business and lawful methods. This works no hardship, but is in the interest of both the public welfare and the corporation. The failure here has been the cause of the complaint heard against very many corporations.

THE LAW.

Let us, therefore, now proceed to a brief examination of the principles embodied in the law that provides for the existence and life of these artificial persons, with the view to discovering the nature and origin of the abuses that have arisen.

Section 3235 of the Laws of Ohio, passed 1894, provides that "Corporations may be formed in the manner provided for in this chapter for any purpose for which

individuals may lawfully associate themselves, except for carrying on professional business." Then follows the provision for regulating corporations formed for buying and selling real estate. It is evident from the terms of this law that the supervision of the state over corporations in their origin is of the most general kind. The state only inquires whether the purpose for which the persons join themselves is lawful. The statute further provides that "If the organization is for profit, it must have a capital stock."

Section 3243 provides that "Ten per cent. of the stock should be payable at the time of making the subscription and the residue thereof at such time and under such circumstances as required by the directors."

Section 3244 provides that "Upon the subscription of ten per cent. of the capital stock, the subscribers, or any five of them, may proceed to organize"; and the same section provides that "The incorporators of the company shall be liable to any person affected thereby, to the amount of any deficiency in the actual payment of said ten per cent. at the time of so certifying."

This presumes upon, but does not require, the payment of even this ten per cent. It thus appears that a corporation may be formed without a dollar in the treasury or paid on the stock subscribed.

Section 3258 provides that "The stockholders shall be held liable for an additional amount equal to the amount of their stock to secure the payment of the debts of the corporation."

It is the evident purpose of this law that corporate business should proceed upon an honorable and honest basis. The terms of the law are, however, fatally defective in securing such a result. It is possible for a company of men not worth a dollar to make subscription for stock which they cannot pay, and proceed to the organization of a corporation.

The first high function of a corporation is usually to borrow money. In the case supposed, the stock and the stockholders combined would not be security for one dollar, while they are authorized to do business under the laws of the State of Ohio.

In this connection it should be remembered that the masses of the people have a right to presume that the institution authorized by the state to do business has some property basis on which its business is transacted. From this brief review three facts appear:

First—A corporation may exist without any paid-up capital, although the law clearly presumes upon a capital.

Second—Such a corporation, although coming within the letter of the law, may not offer the slightest security for its debts as contemplated in the law.

Third—That the law, while providing for the organization of corporations, and presuming upon their character, does not exercise any such supervision or control as to provide against fraudulent practices.

We are, therefore, at a point where we may now see the origin of the abuses with which corporations are justly chargeable. They grow out of a legislation constructed for honest purposes, but unfortunately available as a cloak by which designing men may advance their own interests. The character of these evils is determined largely by the opportunities afforded. In Ohio we are both better and worse than other states in this respect.

SOME SPECIFIC ABUSES.

It may now be proper to call attention to some specific abuses that may serve as a basis on which some observations are to be made later. This not so much as a matter of information as of illustration.

Among the most familiar organizations of corporations giving rise to great abuses may be mentioned the Standard Oil Company, which, in its early history had a capital chiefly existing in the power conferred upon it by two agreements through which it obtained secret rebates from the chief trunk lines, not only upon its own shipments, but upon all the shipments of petroleum made by all other shippers. By capitalizing this power, in twenty years a money capital was accumulated of over one hundred million dollars. The special vice of this company was in the secrecy of its management. Under the cover of law it did what could not endure the revelation of the witness stand. Under this scheme the material was cheapened to the consumer, and this fact has often been urged as a justification of the business. To this two things ought to be said: that the cheapening of a product would not justify fraud; and, second, it has never been proved that the cheapening was intended by the company or produced by it. Other influences beyond the control of the Standard Oil Company were potent in bringing about this result. The vice of this company is one common to all great corporations. Until some effective means of investigating the business of corporations be provided, we may expect this class of abuses to continue.

Another illustration is found in the railroads. If a popular vote were taken, they would probably be counted the chief of sinners. And, yet, they have done more to develop and enrich the country than any other class of corporations. There is, however, no doubt about their abuses. Sworn statements of officials would furnish proof enough.

They have demanded exorbitant rates; they have discriminated in rates; the famous "long and short haul" controversy suggests a long train of evils; they have favored one city as against another; they have "watered" their stocks; and there is some evidence that they have used undue influence with members of legislatures; roads have been manipulated in the interests of the few as against the interests of the public and the small holders. Indeed, so notorious is this practice that a Western judge stated to me last summer that in many cases a receivership meant a deliberate plan to repudiate debts and freeze out the small stockholders. Of course, in all such schemes, the public and some individuals suffer. I have recently seen an official statement showing that a great railroad corporation had a bonded indebtedness, in addition to the capital stock of more than the total cost of the road. In another instance the amount paid for construction and equipment was a trifle more than the bonds issued for the same period. This was exclusive of the capital stock. Such statements prove beyond question that additions and improvements are in some cases made upon borrowed capital.

In the biennial report of the attorney general of Nebraska, December, 1890, it was stated that "In many instances the only money invested in railroads was that derived from the sale of bonds and that the stock to the same amount is issued gratuitously to the stockholders."

This statement would prove my last statement, and is also sufficient to define practically what is meant by "watered stock." It is stock for which an equivalent in money or property has not been given. Such a practice has been in some cases defended as an effort to make the "Capitalization uniform to the value of the property as determined by its probable earning capacity." It is claimed to be an effort to solve a commercial question, not an effort to cover up extortion.

But it does not appear how or why all "watered stock" may be so free of fraud. It is well known that in many instances "watered stock" has been the occasion of great speculative profits. Such stock does not represent a value received and is fictitious in whole or in part. If it be used as a basis on which to float bonds there is a double fraud. At all events, it furnishes an opportunity to lay claim for interest on a capital that does not exist. It furnishes a plausible reason for high rates.

That the evil is not an imaginary one may be inferred from the fact that the State of New York has found it necessary to provide by law that railroad stock may not be issued except for labor, property, or money; and that no increase of stock shall be valid until approved by a two-thirds vote of the stockholders at a legally called meeting for such purpose and by the board of railroad commissioners.

It would be quite apart from the purpose of this paper to attempt an enumeration of the abuses justly chargeable against the railroads. I only add that they illustrate the general truth of inadequate legislation. As corporations—creatures of the state—they have enjoyed a large degree of protection, but their rights and privileges have not been well defined. They have not been sufficiently under a wise control of the state. We need not be surprised that they have gone to excesses. It is now too late to plead that their great benefits more than balance their abuses. The state's business is to maintain justice, rather than to balance virtues against vices. The hopeful feature lies in the fact that everywhere the railroad corporations have been increasingly mindful of an intelligent public sentiment.

Another class of evils in corporations may be illustrated in the processes of reorganization. It is not uncommon that in the case of an unprofitable enterprise a reorganization is effected. The stock is transferred from the responsible to the irresponsible stockholder, who for fraudulent purposes has consented to buy the stock or accept it as a gift. The business is then closed out. The responsible stockholders upon whom the duties of the corporation are still ethically resting, have by a subterfuge escaped. A legal technicality has saved them. The double liability of the stockholder reveals itself to be, in such a case, only a double fraud; while the creditors bear their losses as best they can.

REMEDIES.

It now remains that some remedies be suggested. In considering these it may be well to remind ourselves that the evils do not grow out of the fact of corporations. A study of these artificial persons will convince any one that if they were abandoned, the same or greater evils would probably rise from the substitute.

(1) First of all then, the remedy should begin at the beginning. There does not appear a sufficient reason why the law should make the organization of a corporation so easy a matter. There should be some reason for its existence other than the desire of the proposed incorporators. There seems to be no logical reason why the state, having gone into the business of creating corporations, should be obliged to do an unlimited business. It seems competent for the state to say what corporations or what classes of corporations may or may not exist. It seems reasonable that the state should demand that a proposed corporation should show cause why it should be taken under the state's protection.

(2) Second, it seems but reasonable that the state should demand that every corporation should have an actual capital and not a subscription paper as a basis of business. This would at least give the actual incorporators some interest in the business other than to defraud innocent holders. It is through the lack of actual capital that some very serious abuses have come.

(3) Third, it is competent for the state to furnish protection to the public by an inspection of the business of all corporations, much the same as is now exercised in the case of insurance companies and national banks. The articles of incorporation set forth the place and purpose of business. It would greatly provide against fraud and dishonesty if a state officer was required to report annually the condition of all corporations. Secrecy of management has brought about many abuses. There is no good reason why the state may not only see that corporations are begun upon a proper basis, but that they continue on such a basis. This would give some

stability to securities, and be a practicable method of relief from the insufficient and unsatisfactory security now furnished under the statutory liability.

(4) Fourth, it seems reasonable and just that concerning the increase of capital stock and its transfer there should be some public recognition. The New York law referred to above provides for the approval of both stockholders and the railroad commissioners. If competent public authority should appraise all stocks and corporation property and should have authority to veto any proposed increase of capital, many open doors to fraud would be closed. The corporation is protected in its rights, and it seems but fair reciprocity that the public should be protected against fraud by such measures as would require all stock to represent actual property and all transfers to be bona fide.

(5) A fifth suggestion has often been made, namely, that a limit be made upon the amount of bonds a corporation may issue, or that it may be in some way regulated.

Some railroad men were discussing a new line sometime since, and the question arose as to what constituted a sufficient reason for a new road. After several had expressed their minds upon the subject, with the usual good and bad reasons, the remaining member of the company was appealed to, and his brief but characteristic reply was, "A basis for bonds." This man was not only a shrewd railroad man, but an honest confessor. The practice of railroad men is a sufficient reason for this suggestion.

CONCLUSION.

In concluding this paper it is to be noted that the one plea is in the interest of state regulation, and control of all corporations. Careful supervision might make it possible to detect the dishonest and fraudulent and bring them to punishment. The cure for the evils that now endure lies in this direction. The experience of Massachusetts in the state control of corporations has been successful beyond the expectation of its most ardent advocates. The corporations and the people alike have come to recognize obedience to law as the great principle of the government.

In the matter of relief there would seem to be three remedies: The destruction of all corporations, state ownership, or state control.

I need not now add anything to the argument against the destruction of corporations. That is clearly out of the question.

As to the matter of state ownership, it may be briefly described as the exchange of an unlimited number of corporations with definite evils, for one corporation with an unlimited number of evils. The state ownership of all productive enterprises for profit, is not in harmony with the principles of popular government. Such a proposition practically embodies a second proposition to revolutionize the government in that particular.

"Better bear the ills we have than fly to others we know not of."

The third method, that of state control, seems to be in entire accord with popular government, and embodies no principle or practice that would destroy the rights of the individual. The best argument for such control is that where it has been most exercised, all parties have been best pleased.

We are now at a time when corporations are rapidly multiplying. A study of the records of the secretary of state, in this regard, would astonish very many people. We may expect such organizations to multiply with the increase of the country's business. That means that evils shall increase unless we provide against them. The interest of the whole people demands that wise legislation shall protect us from unscrupulous methods.

President Clark: We have another paper that is right on this line, "Exorbitant Freight Rates, and the Remedy Therefor," by Mr. R. H. Wallace, of Chillicothe, Ohio, to which we will now listen.

Mr. Wallace on being introduced, presented the following paper:

PAPER BY R. H. WALLACE, CHILLICOTHE, OHIO.

Those who contribute to the wealth and comfort of the world, may be divided into three classes: They who change the bulk of things: He who takes one bushel of wheat and changes it into twenty bushels, or he who takes a bushel of corn and changes it into one hundred times as much, adds to the wealth of the world and is a benefactor to his race. To this class may be added, all agriculture. There is no marvel that in all ages this has been regarded as God's calling, and agriculturists have been called God's noblemen.

They who change the form of things: He who takes a piece of timber worth but a trifle, and changes it into a piece of furniture worth many times as much, or he who takes a pound of steel worth but a few cents, and changes it into hair springs for watches worth many hundreds of dollars, also adds to the world's wealth,—is equally the benefactor of mankind. To this class must be added all who manufacture. Not only those who are employed in the great factories of the world, but those who work in the small and even solitary shops. It would be unfair for me to omit to mention those who toil in the domestic factories of the world; the homes of men. The women, when you consider that their work consists largely of manufacturing food for the table, clothes for the person, and articles for all household purposes, have large share in the world's great workshop of changing the form of things.

They who change the location of things: He who will take a tree from where it is useless, and necessarily worthless to where it is needed for use, and is of much value, or he who will take a ton of coal or ore or any other thing, and so change its location that the world may use it for its comfort and wealth, is no less a blessing to mankind, and does his full share towards the world's wealth. This includes all commerce. Commerce is defined to mean, "The exchange of merchandise on a large scale, between different places or communities; extended trade, or traffic." In its wider application, it means the distribution of things needed for the use of mankind. So that all who are engaged in such distribution may properly be said to be engaged in commerce.

But for the purposes of this paper, we will consider the branch of commerce known as the carrying business, or they who change the location of things. Things derive their value as much from their location as from their inherent qualities. Timber in the forest, coal or ore in the mine or on the tippie, grain in the shock or elevator, are things worthless, could they not be carried to where they are needed. The importance therefore of transportation is so apparent that the above will be sufficient introduction to it.

The methods of transportation are now practically confined to three: Wagon, by horse power. In the earlier times the pack upon the backs of animals was the common and best method for land transportation. Cotemporary, however, with the pack was the natural water way. The sail vessel was the vehicle of trade for sea and river.

As civilization progressed, the wagon with the animal attached supplemented the pack for land use. Our later civilization has largely supplanted the sail vessel for water trade, by the great steamer, and land trade by the magnificent rail road train. No method of transportation short of those of the present, would meet the

demand of to-day. Since things must depend so largely upon location for their values, it must of necessity follow, that some sections of the country have a marked advantage over other sections. If one section is nearer to what the world calls a market for its products, that is, where its products are to be used, than another, it will have a decided advantage. The producer will have to pay the difference in the cost of transportation. It will readily be seen, that they who are near the great channels of commerce, will grow rich more rapidly than those more remote. Transportation rates should be made as nearly as possible, so as to equalize the different sections of the country. The cost of transportation of goods, should be in such proportion to other branches of industry, that those engaged, should be on an equality with other industries. Recognizing this principle of equality, we ask, are the farmers of Ohio on an equality with some other sections of the country? In answer to this question, I remark that the shippers of Ohio are at a mortal disadvantage with the great Northwest. Our location places us where we should be as well situated as almost any part of our great country.

A ton of freight can be transported from the farthest western end of our great lake system to New York, cheaper, by far, than the same freight can be from central Ohio. This fact renders producing by our farmers especially precarious, for the reason that we are not in position to compete with the great Northwest. The difference between the cost of water transportation and that of railroads is so great that unless some relief can be given to the Ohio farmers, they will be obliged to either change the character of their productions, or abandon their Ohio farms, and move to the great Northwest.

What are the causes of these high freight rates?

I am frank to admit that the railroads cannot materially lessen the present rates, and longer maintain themselves. Few of them are now able to get enough out of their business to pay any dividend on the investment, and many of them are already in the hands of receivers, and many more of them are in danger of failure. The cause lies deeper than the mere surface; one of the causes is in the fact that there are too many parallel railroads. It is evident that in the great hurry to have many railroads, the people have forgotten that it is possible to get more of them than the business of the country will sustain. No country is the richer for having more of anything of this nature, than its business requires.

To illustrate this fact, there is a coal field in Ohio having four railroads penetrating it, any two of which can do the entire business of the four, without any additional equipments, and one of them can be so equipped as to do the entire business of all.

These roads do not cut the rates, for to do so would be to ruin all of them. But they pool their interests, and then contend for the business. There are those who are foolish enough to believe in this miserable farce. They affect to see relief to this situation in an additional road for this section. A practical subsidy has been granted to a corporation by the state legislature, to help them build such a road. Already there is a vast amount of idle capital tied up in these four roads. The interest on the investment, is sufficient to overburden the people of the Hocking Valley. There are a great number of idle men in this section that have annually to be kept by outside charities. It is bad political economy to pauperize workingmen to gratify the cupidity of speculators. Speculators hasten, however, to lay still heavier burdens upon an already overburdened public by building more roads where they are not needed. The above will apply to all sections where there are parallel railroads. A farmer who has work and feed for one horse is not benefited by the purchase of another. In this case it is evident that he must have, instead of one well-fed horse, capable of doing his work well, two half-starved horses incapable of doing his work half as well as one well-fed horse would do it,

or he must cheat some one out of feed enough to supply the other. This is practically the effect of parallel railroads. This, therefore, in the necessity of things, becomes a prolific cause of exorbitant freight rates. The second cause is found in the fact that most all of the railroads are heavily in debt. Their earnings *must* be disproportionate to other branches of public service. Many of the railroads are mortgaged for double and sometimes triple what they can be sold for, or it would cost to build them. How this state of things came about, I am not fully informed. There seems to have been a sort of craze for bonding railroads, until the whole system seems to be so heavily burdened with debt that the earnings seem to be disproportionate to the service rendered. This may account for the colossal fortunes of railroad magnates. The interest on this enormous indebtedness must be paid, and money for current expenses must be had. The roads must earn this sum. The volume of business will not do it at reasonable rates. So exorbitant rates must be charged. I think that one of the financial questions of the day is, how to pay off these enormous debts, without readjustment of almost the whole system of railroads. To continue the present oppressive freight rates will be to break up the producers and ruin the consumers. Not to continue them will be to break up the railroads. Somebody must pay these debts, or the holders of these bonds lose their investment. I do not believe the roads can materially lessen these rates without ruin to themselves, but it is equally true that the Ohio farmers cannot longer pay them and successfully compete with farmers of other sections of the country.

It is doubtful if any very radical disturbance of our system of transportation would not seriously damage the business of the country. In view of these facts, what is the safest remedy for this crying evil? It will require wiser heads than mine to work out to its ultimate end this great problem. I may suggest, however, one or two things that may help us to reach a final solution.

Since parallel roads are such a prolific cause of high rates of freight, let us have no more of them, for every one of these must add to the burdens that already retard our business. Because the more money we invest in new roads which adds nothing to the demand for freights, will require the payment of interest that can only be had by higher rates. Where railroads have come into competition with water ways, the latter have always dominated the rates. Wherever there are water lines, the rates are low and when these freeze up, or for any reason are out of use, railroad rates immediately go up. Where there is no water competition, railroad rates are always high. The difference between us of the interior of Ohio and those living along the great lake water way in this regard is startling. A farmer who lives in the northern half of Ohio, states that the difference in freights between his home and the nearest point on the lake to New York, on his wheat crop alone this year would pay his entire tax for the year and leave him fifty dollars for other purposes. This fact has been verified in a number of other instances. If the Ohio farmers could have the advantage of water rates, it would leave them a nice margin to bridge over hard times. What is said of this kind of freight is practically true of all other kinds. There is little wonder that the Northwest and lake region, because of their magnificent water way, are far outstripping the interior in the race for wealth. As an example of this: During the two decades from 1870 to 1890, the four great lake cities of Buffalo, Cleveland, Detroit and Chicago increased in population two hundred and nine per cent., and in commerce one hundred and eighty-nine per cent., while the four inland cities of Cincinnati, Louisville, St. Louis and New Orleans, during the same period, increased forty and one-half per cent. in population and forty-seven per cent. in commerce.

These startling facts demand that some permanent remedy for this unfair discrimination between sections equally fertile and rich, naturally, be decided upon.

Our natural water ways must be improved so as to render them available, and where there are no available natural ways, let us make artificial ones. Since the above was written a gentleman, who is a manufacturer of drain tile, told me that the freight rate on tile from his works on the Ohio river over to Richmond, Va., was three and one-half dollars per ton, while the rate from the Hudson river, about an equal distance, was but seventy-five cents per ton. The difference between these two points in freight alone is fatal to our trade. It made but little difference to the Ohio farmer, who could get one dollar and a half per bushel for his wheat and one dollar for his corn, what he paid in freight to market. He could pay ten cents per bushel and still have a good profit. But now when he gets but fifty cents per bushel for wheat, and twenty-five cents for corn, ten cents per bushel freight means ruin to his business. It is apparent to you all, gentlemen, that this question is vital to the agricultural interests of the state. It becomes your duty, by all means in your power, to secure such a canal for Ohio, connecting the Ohio river with the lakes, as the Erie canal. Such a water way would connect Ohio by direct line with the sea board. This would give Ohio producers such freight rates as would place them upon equality with the rest of the country. Recognizing this fact, United States Congress has ordered a survey across Ohio, of three lines for such canal. The report, which will be made in a few days, will show that any one of these lines is both feasible and practicable. There are already two such lines of canal across the state, that can be utilized for this purpose, and will greatly reduce the cost of the canal. It seems strange, when the need of such a work as this is so apparent, that there should be so much indifference, not to say opposition to such a scheme, upon the part of so many Ohio farmers.

I will note a few of the objections now urged against such a work. It is said that canals have had their day and can never be made useful again. The fact that the whole tendency of railroads is to consolidation, and monopoly, and the oppression of both the producer and consumer, is a sufficient answer to this objection. If they have seen their day, why are the railroads so anxious to get them out of the way? There is now a growing sentiment in favor of canals throughout the world, because they are more and more regarded as the great regulators of freight rates. In Europe many millions of dollars are being spent annually upon them; and Europe is not in the hands of a railroad monopoly either. New York will now bond the state for nine millions of dollars to improve and enlarge her canals. Ohio, who needs such water ways as much, or more than any other state in the Union, is permitting her canals to fall into decay from sheer neglect, or is allowing them to be gobbled up by great corporations for naught. It is said, again, that such water ways would cost too much. Do not forget, gentlemen, that your railroads are now costing you too much. One road in Ohio, at one time confined to the limits of the state, and with less than three hundred miles of track, was bonded for thirty millions of dollars. Enough to build a canal eight feet deep one and one-half times across the state. The Vanderbilt system of railroads is valued at six hundred millions of dollars. The canals put in first class condition and built, wherever available, would cost but a moiety compared with railroads. It is said that they will not pay. Nor should they be expected to. They should be free public highways; free to everybody who will do business upon them. They will then be cheap to the Ohio farmer. No one expects High street in Columbus to pay the city anything, nor does any one think of abandoning it because the city does not receive anything from it. New York never gets a dollar from her canals, and yet she spends three quarters of a million of dollars, annually, in keeping them in repair.

There is no cry therefore of the abandonment of them, because they do not pay. That they will be efficient carriers of freights, consider, that while it costs now fifteen cents per hundred to haul heavy freights to New York by rail, with such a

canal, good engineers have estimated that it would cost not more than four cents by such a water way. This difference is a good margin on either farming or manufacturing.

Ohio owned at one time property in her water ways, that if she owned now, would bring in round numbers forty million dollars. She now owns what is valued by the canal commission at twenty-five millions. The other fifteen million dollars worth is now occupied by railroads, and until very recently the state never got a dollar for it. Thirteen or fourteen million dollars worth of it was literally given to the railroads. Legislators have been guilty of great imprudence, not to use stronger terms, in thus giving away to oppressive corporations such valuable property belonging to an already tax-burdened people. The remainder of this vast property is now being sought after by speculators who, under the specious cry of ridding the state of expensive and worthless property, have for themselves gigantic schemes of confiscations. Behind them are to be found great corporations. When there is a bill for abandonment of any part of our canals before the legislature, it is safe to say that there is a job of some kind in it. Look behind the curtain and you will likely find some great corporation who is putting up for the scheme. We are making a mistake, almost fatal, if we give up any part of this valuable property, but if it is given up let it be sold to the highest bidder, and let us be sure the state gets the money. The history of the past has been one of which the state cannot be proud in this regard.

Let us hold our legislators to a strict account for the manner in which they treat this very important question, and insists upon the improvement of their water ways as the best means of protecting ourselves against bankruptcy.

The President: The discussion of these papers will now be opened by Col. J. H. Brigham.

Col. Brigham: I understand that Mr. Dodge's address is to be along the same line, and I will ask that this be presented before anything is said.

Hon. Martin Dodge, of Cleveland, was here introduced and spoke upon "Better Roads and Larger Profits."

ADDRESS OF HON. MARTIN DODGE.

Mr. President and Gentlemen of the Convention :

I noticed that the Governor this morning, in his address of welcome, said that the number of farms in Ohio is greater than the number in any other state. It occurred to me also, having owned a number of these farms myself, that the more we have had of them for the last ten or fifteen years, the greater the loss has been, for so far as I have had any knowledge, experience or observation, the value of agricultural land in the State of Ohio has been declining most rapidly in most parts of the state during that period. And I could not help thinking how much the loss in the aggregate to the whole state had been during this period, having, as I say, sustained a small portion of it myself. I made a hasty computation while the Governor was speaking, of what I think is the approximate loss we have already endured by this depression. Estimating the quantity of agricultural land in the state at twenty-five million acres, and supposing that the decrease in its value, upon the average, has been twenty dollars per acre—and I think it has certainly been that much—the loss would be five hundred million dollars. Within the past two or three days the Ohio State Journal has published answers to eight different questions which it sent out to numerous correspondents in the state, asking, among

other things, what the depreciation of agricultural land had been during a period of ten or fifteen years; and it states there is a wonderful uniformity in the answers to that one question, showing that the depreciation has been about fifty per cent. I think this is not far from the true figure, but suppose we have lost only twenty dollars per acre on the agricultural land in the state, it would make an aggregate loss of five hundred million dollars.

I was very glad the Governor advised us that he is in sympathy with the farmers and also that he would advise the members of the legislature to do anything and everything that could be done consistently to bring relief to the whole people, and especially to the agriculturalists. While the Governor did not speak about this depreciation I have no doubt that he has knowledge of it, though it may be doubtful whether anyone has a full appreciation of the immensity of the loss. I have considered this very much, and I am in favor of doing anything that can be done, either through the recommendations of the Governor or through any other means, to bring any relief or benefit that can be brought to this great and worthy class of people.

It is well known that the cost of transportation affects the profits of industry and even the wages of labor, and this is especially true of the agricultural industry and labor bestowed upon lands. Those lands that are remote from the means of transportation or inaccessible are of little value and may be even worthless, while other lands of no better quality but more favorably situated as to the means of transportation, are higher priced in proportion to the transportation facilities. The cheapest means we have or know of is transportation by steamships upon deep water, which is so low that a ton can be carried a thousand miles upon the great lakes for one dollar and twenty-five cents, or less. The next in cheapness is transportation on the steam cars, which upon the average in the State of Ohio, is about one-half cent a ton per mile, and less upon the long haul. So that on the average a ton can be carried two hundred and fifty miles for one dollar and twenty-five cents. Next in cheapness is transportation by electric cars upon the highways.

This is a new and only partially tried means of transportation. I will not say it is an untried means, for it has been sufficiently tried to have passed by the experimental stage, and I have estimated from various points of view, and from data which I will not take time to give you now, that the rate of transportation upon such cars can be, and is, where in use, not to exceed five cents per ton per mile. That, you will observe, is ten times as great as the average prevailing rate upon the steam cars. I will say to you that I think my estimate is high, for I have made liberal allowances, but I will assume that to be the rate that is attained where these cars have been used and that may be attained everywhere where they will be used. That then, would give us a means of transporting a ton twenty five miles at the same cost, that is, one dollar and twenty-five cents (which I use as a sort of measure here), that it now costs to transport upon the steam cars two hundred and fifty miles, or steamships one thousand miles.

The next and last that I shall mention, and the most expensive means we have in use, is that of animal power; and the prevailing rate of transportation by animal power is twenty-five cents per ton per mile. In other words, we are only able to move by horse power for the same cost, one dollar and twenty-five cents, a distance of five miles, as against a distance of twenty-five miles which we can reach with the electric cars, or two hundred and fifty miles with the steam cars or one thousand miles with the steamships.

How the application of these various means have already affected the value of land and have made it possible for your competitors upon the free lands in the west a thousand miles away, to bring in their products and take the home markets

at your doors, I shall not have time during the limited period allowed me, to explain in detail, but you are familiar in a general way with the fact, and you are undoubtedly familiar with the effect that it has had by way of depression.

INANIMATE POWER.

I will state that the official report of the Ohio Road Commission of 1893, of which I had the honor to be chairman, was the first official document ever published in this or any other country calling attention to the slight progress made in reducing cost of transportation by animal power as compared with the progress made in every other field of development, and suggesting that the time had come for a new departure by the application of inanimate power to take the place of animal power as a universal system of transportation, and also stating that the average cost per ton per mile is twenty-five cents under the prevailing system by horse power. This figure was arrived at by data gathered from the long hauls in Mexico and in the United States from the Missouri river across the plains to the Pacific coast; and short hauls in various counties of Ohio from five to eight miles, upon such material as lumber, wood and timber, and the agricultural products from the place of production to the railroad stations; and the still shorter hauls in larger cities from boat landings and railroad terminals from one to five miles, especially upon coal, lumber, stone, brick and heavy building materials. In Mexico for hundreds of years their only means of transportation was that of animal power; and their cheapest rate, between the city of Vera Cruz at the sea coast and the City of Mexico, a distance of 272 miles, was twenty-six cents a ton a mile. It is a remarkable fact that during the period of nearly four hundred years they were not able to reduce this rate of transportation below twenty-six cents per ton per mile, and it is a more remarkable fact that in our own country and in our own time with all the improvements that we have made touching the means of production and the means of transportation, we have done but little better than our less enterprising neighbors in so far as we have adhered to animal power as a means of transportation.

The correctness of my figures upon the excessive cost of transportation by animal power has been challenged, but never successfully, and it affords me great pleasure to be able to present to you to-day a confirmation of those figures from the highest authority. About the same time the official report of the Ohio Road Commission was made and published, in 1893, the government of the United States, in pursuance to a law passed by Congress in March of that year, appointed General Roy Stone as a special agent to gather data and report in reference to any and all matters pertaining to the cost of building roads and the cost of transportation over them. I have lately received from Gen. Stone the advance sheets of bulletin No. 19, in which he states, after two years of investigation of this subject with the aid of the division of statistics of the Department of Agriculture, that reports have been gathered from twelve hundred counties, giving the average length of haul in miles from farms to market or shipping points; the average weight of load hauled and the average cost per ton per mile. The figures show that the average cost per ton per mile in the Eastern States is thirty-two cents; in the Northern States twenty-seven cents; in the Middle Southern States thirty-one cents; in the Cotton States twenty-five cents; in the Prairie States twenty-two cents; in the Pacific Coast and Mountain States twenty-two cents, and in the United States twenty-five cents, thus confirming, to a fraction, the figures published in the report of the Ohio Road Commission in 1893.

I wish to emphasize the fact from which there is no escape, that the rate of transportation with horse power is and always has been excessively high, and that the improvement made from generation to generation and from century to century

along that line has been very slight indeed, and all of the evidence from ancient history down to the most recent tests alike show a high rate and but slight improvement compared with the progress made in other departments of industry or by other means of transportation. Now, it being true, as I said before, that the value of land and the wages of labor are affected by the cost of transportation, we should expect to find that where so high a rate as twenty-five cents per ton per mile prevails, that the land would diminish in value and that the rewards of labor bestowed upon such lands would grow less and less. What we should expect to find we do find. It is not necessary for the careful observer to get his information through official reports by way of figures, for he can see before him the evidence of this excessive cost of transportation in the diminished price of land and the diminished rewards of labor bestowed upon it. The price of land decreases in almost inverse proportion to the distance over which the agricultural products must be transported by horse power. The greater the distance the less the value of the land and the less the reward of labor bestowed upon it.

In the Ohio report of 1893 the total amount of tonnage moved by horse power in the United States for the year 1892, was estimated at five hundred million tons; the average distance at eight miles. The cost of moving this tonnage at twenty-five cents a ton a mile, would be one billion dollars, which was stated to be the cost of operating the wagon roads for one year. How this great burden could be partially lifted from the people was the main question considered and reported upon by the commission, and we indicated that by substituting inanimate power for animal power for transportation upon the highways it would be possible to eliminate four-fifths of this expense from the cost of transportation. In other words, instead of one billion dollars being required two hundred million dollars would be sufficient, leaving a net gain to the people of eighty per cent. of the present cost, or eight hundred million dollars annually.

These figures, though expressly stated to be estimates and approximations, have also been substantially confirmed by the investigations of the United States government through the office of road inquiry. The same bulletin to which I have referred gives the gross weight of the entire agricultural product of the year 1895 at two hundred and nineteen million eight hundred and twenty-four thousand and two hundred and twenty-seven tons, to which is added ninety-three million five hundred and twenty-five thousand tons of wood and lumber. This latter item being one-fourth of the total product of the forests and considered as that proportion of the whole which is transported upon the public roads by animal power. The agricultural products consumed upon the farms are offset by other items transported to the farms, such as building materials, coal, farm machinery and merchandise, so that the total agricultural product is considered as equivalent to the tonnage moved over the road. Adding these two items together, that is to say, the agricultural product and one-fourth of the forestry product, we have a total of three hundred and thirteen million three hundred and forty-nine thousand and two hundred and twenty-seven tons. The cost of transporting this gross tonnage over the average distance, which the bulletin states as twelve and one-tenth miles, at the average rate of twenty-five cents per ton per mile, makes three dollars and two cents per ton, and the entire cost of moving this annual tonnage at that rate gives a grand total of nine hundred and forty-six million four hundred and fourteen thousand six hundred and sixty-five dollars and fifty-four cents. Supposing this could be moved at a cost of five cents per ton instead of twenty-five cents per ton per mile, the cost would then be one hundred and eighty-nine million two hundred and eighty-two thousand and nine hundred and thirty-three dollars, and the saving would be seven hundred and fifty-seven million one hundred and thirty-one thousand and seven hundred and thirty-two dollars, which is substantially the same as the estimated saving according to the Ohio report of 1893. That estimate being

eight hundred million dollars; the present figures, based upon reports of one of the departments of the government of the United States, being seven hundred and fifty-seven million one hundred and thirty-one thousand and seven hundred and thirty-two dollars..

These figures, I know, are great, beyond the power of any mind to fully conceive, and the benefits conferred upon the state and upon the country must be equally great, provided we can substitute for the present costly method the more economical one for which I have been so long contending. No internal improvement was ever proposed by any state or by any country which gave promise of so great results or that was attended with so great benefits to so large a number of people as the introduction of the new system of transportation by inanimate power upon the highways to take the place of animal power as a universal system for moving all the products of the country as well as all of the people that are now moved upon the common roads by animal power.

There can be no doubt about the immensity of this traffic that constantly goes by animal power upon the roads, and there can be no doubt about the great cost of this transportation, although it is true that the ordinary individual is unconscious of this cost for the reason that he does not ordinarily pay in money; but the cost of transportation is paid by the producer and is merged in with the cost of production. It is also true, as Captain Wallace said, that when the price of agricultural products was high it was not necessary to figure very close, whether it cost two dollars a ton or three dollars a ton, or whether it cost ten cents a bushel or five cents a bushel for transportation, because the profit on production and the increase that resulted in the value of the land was such that it was not necessary to figure close. Large profits were always made; but when we come to the small prices we now have it is material to consider what part of this cost is transportation and what part is production. And if it is true, as I believe it is, that you are paying five times as much for the cost of transportation as you ought, then you are laboring to such a great disadvantage that it would be almost impossible to succeed. As far as I am concerned, I am fully satisfied that it is impossible to compete, with this expensive horse power, against those who have the better and cheaper means. And it is true, as you know and must take notice of, that farmers in some places do have the cheaper means. We have the cheap steamboat on long distances; cheap steam car rates on comparatively long distances, and it is also true, though doubtless a new fact which you have not considered, that in some places they have the electric car service. Out of the city of Cleveland, where I live, we have numerous suburban lines, one over thirty miles, another over twenty-five miles and others projected in every direction, and wherever the tests have been made the results have been very beneficial; not only have the results been beneficial in reference to the immediate service, but the effect upon the land value has been instant and uniform. No case can be found where the electric roads have been built that they have not been accompanied by a large increase in the value of the land. And right in connection with that, let me state that it is also true that where the macadamized roads, or free turnpike roads have been built during late years, at an excessive cost taxed upon the lands lying in the vicinity, the value of the land has not only failed to respond to the expected increase, but there has really been a diminution in the value of the land; and what was intended as a benefit has been a failure, not on account of the road, but in spite of that kind of improvement. It is doubtless true that in other days when the horse power was cheap in comparison with the prevailing means, that such roads did add to the value of the land, but so much improvement has been made by other means and so little in the case of horse power, that the horse power is no longer a cheap means of transportation, and therefore roads built for purposes of horse power do not add to the land value as they once

did. What I am claiming is that the only way to restore this value is to bring us such improvements as will put us on more nearly equal terms with our competitors than anything we now have.

A NEW AND UNIVERSAL SYSTEM.

I am contending for a new and universal system of transportation upon the common roads of this country without the aid of animal power, mainly for the following reasons:

First of all, it is impossible ever to secure either cheap or rapid transportation by horse power. The average prevailing rate to-day is twenty-five cents a ton a mile and no amount of expenditure of public money for public roads can reduce this very much, because the power itself is both weak and costly and the amount of power required for moving vehicles over the best road is from five to eight times that which would be required to move the same load over smooth steel rails. We have reached the limit of horse power and the units of resistance in transportation cannot be overcome with true economy by such means.

In the second place, a changed system has become a matter of necessity more than a matter of choice, because already by steamships and steam cars and electric cars, in some places, the rates of transportation have been so reduced that those not enjoying such rates are unable to compete with those who do enjoy them, and as a result the competition is so uneven that those who are without the cheap means are being gradually crushed out and exterminated by the competition. No one can long compete on such unfavorable terms as the horse power gives in comparison with the electric power. The effect of this competition has already manifested itself in the falling prices of land remote from easy means of transportation and the diminishing number of people in the rural districts that are dependent upon horse power as a means of moving their product. Already twenty-eight counties in the State of Ohio, according to the census of 1890, show a diminished number of people as compared with the census of 1880, and in addition to this there are seven hundred and sixty different townships and innumerable villages that show the same result.

Another reason why I favor this system is because it will build up a competition to the steam roads. The two cent rate which the people have been so long resolving in favor of will not only be attained by this competition, but a one cent rate is now within sight and within reach if we build up and encourage by a liberal policy the electric car service according to the principles for which I am contending. Actual experiment has already shown in many places that upon the short haul, electric cars can carry and do carry their passengers for one cent per mile, and often less. Upon the long haul the steam roads, with their solid trains and high rate of speed, are exactly adapted to economic laws that tend to the lowest rates, and as they have already reached an exceedingly low freight rate upon the long haul so they will reach the low rate of one cent per mile upon the long haul for passengers.

Two things should be noted in this connection as being already accomplished in this direction, one is that upon excursions where the cars are well filled all companies are eager for patronage at one cent a mile, or even less, and also that their reports show that the average rate received is less and less from time to time. The only serious question I have met is the practicability or the possibility of putting this improvement upon our highways.

I must state that the concentration of population which has so rapidly taken place within recent years, is one of the corner stones upon which the new system must rest.

The force which has concentrated our population is not yet spent. We are to see a rearrangement of the country population along the lines of the electric roads.

and a still further concentration, so that seventy-five per cent of all the people will live in cities and the remaining twenty-five per cent. will go to and from the centers of population by electric cars. This system is already established in the cities so far as the transportation of passengers is concerned. Most of you know that about one-half of the people of Ohio have now been concentrated in cities, therefore, the necessity of the remainder of the inhabitants reaching these centers of population is a necessity, which did not formerly exist. It was not in the minds of the people when the original system of roads was laid out and when the original system of improvement for horse power was undertaken.

Now, in reference to the cost of transportation over these steel rails, I take it that everybody will agree that it is easier to move a load over the steel than over the stone. If you do not know this, I will state, that all tests show that it takes from five to eight times as much power to move a vehicle over a good gravel or stone road as it does over the steel rails; so that there is no doubt of the saving in the power if we can get the application of this kind of vehicle.

In reference to the distance, anyone will say there is no limit to the distance we may lay these rails, and as to the cost, it costs no more to lay the light rails out through the country roads than to build the macadamized roads. So that offsetting the cost of the roadbed in the one case against the cost of the roadbed in the other case, there is not much advantage or disadvantage either way. And in reference to the power required to move the vehicle there is nothing that can vary the statement I have made to you, that there will be a saving of at least four-fifths of the cost of transportation if the steel rail is used instead of stone. I also want to say to you while I have it in mind that the universal system which must be developed will be developed little by little and step by step, making the existing centers of population the nuclei around which all these roads will cluster and into which they will all lead.

The various uses to which these electric roads will be applied will always depend upon what the people want of them. At first and now the principal use is for passenger service, mail and express; and the carrying into the cities of farm, garden and dairy products for daily consumption, returning with such merchandise as is in constant demand in the country.

When the traffic on these roads develops from time to time, and the public find it more economical and convenient than the old way, universal use is bound to come.

We are met with two difficulties; one the difficulty of ramifying the country sufficiently to accommodate the people, and the other the matter of entering into the cities. We are met with some difficulties on both ends, but from my point of view I regard them as being either temporary or imaginary. I do not think there are any resistances of nature in this connection that we cannot overcome; and I wish to say, somewhat in the way of prophecy, for "coming events cast their shadows before," that I believe it is possible by the processes of development and evolution, but not by revolution to extend these benefits that are great and numerous, to all of the people throughout the entire country; and that the time will come in my day and in your day when there will be no one left in the country who will not be provided with this cheap and rapid means of transportation, and also with that, they will have the telephone for the purpose of communication, by which the labor of going and coming for small articles would be saved. Letters and newspapers will be delivered in the country daily as they are now in the city. The farmer will do business as the business man now does, who instead of taking his own time and horse and carriage to drive, uses the telephone or sends a messenger boy, or uses the electric car. The farmer instead of being compelled to labor for little more than the hired man upon his farm receives, will be in command of those facilities that make work easy; and he will be in command of

those free forces of nature that are so abundant and so little appropriated to the use of those living in the country.

I will explain in the few minutes that I expect to devote to these remarks what exists in the way of obstructions and objections to the immediate application of these lines of transportation through the agencies that the people may employ to introduce them. Of course you know very well that all of these lines so far have been built through the agency of companies. Dr. Thompson has told you how necessary it is to have corporations to carry on great works. While I do not think it is absolutely necessary to employ them for transportation upon the highways, it has seemed to be the inclination of the people to choose agents and authorize companies to perform this work rather than enter upon it themselves. But at the same time I do not oppose it because I believe that whatever these corporations introduce in the way of transportation must be a benefit, for without a reduction of rate or cost, the people will not employ them, but use what they already have at their command; so that while I do not agree that it is best to employ these agencies always, the people almost unanimously consent that we should do so and allow corporations to make the experiments in this matter. And let me remind you that it was the judgment of our forefathers that roads might properly be built and controlled by agents or companies and they themselves pay toll for a time; but it is the history of all these cases that the toll-gate goes down, the road becomes a free road and the people take charge and control of that which is their own. What they did for the improvement of the highways for wagons, people are doing at this time in reference to the improvement of highways for the application of the electric car. That is to say, they are authorizing certain companies to be their agents.

In pursuance of this policy franchises have been granted to various companies, and little by little, they have been spreading out, and spreading out, until we have come to that point where they are about to spread beyond the expectation of almost everyone. The inevitable destiny of these improvements is to cover the face of the earth. These companies in the cities and suburban companies and the companies outside of the cities are beginning to see that there is such a saving in this new process that there is a profit over and above what will be saved to the people sufficient to reimburse them for any and all investments they may put into it. And by way of comparison, while my friend, Captain Wallace, has given you the illustration of three dollars and fifty cents being charged for transportation from some point upon the Ohio river to the Atlantic seaboard in Virginia, which is about one cent per ton-mile, and which he thinks is ruinously high; according to this official statement I read from the United States government, the average cost of moving tonnage by the wagon haul is three dollars and two cents the country over, which is twenty-five times as high. I want to impress upon you that this is a high rate and that the saving which can be effected upon that is sufficient to give a large benefit to the farmer and a fair profit to the carrier by the new system, and ultimately, as I said before, I have no doubt whatever that it will cover the entire face of the country. This does not result because the five cent rate would be considered a cheap rate in comparison with other means, except animal power, but because it is cheap compared with those rates of twenty-five cents and more per ton per mile by the horse power. There is a great saving in this and the companies are just beginning to appreciate that fact; and suburban companies are now being organized with great rapidity, as one of the gentlemen, Dr. Thompson, I think, said, when he spoke of the fact that if you would consult the statistics of the secretary of state, you would be surprised to see how great the increase of new corporations is compared with former years. I could give you abundant illustration of this had I the time to do so.

Now, what are some of the difficulties we meet when we undertake to apply this means of transportation to bring us into the cities? In the first place we must

take notice of the fact that in all these great cities franchises have been given to the companies, which were small in the day of small things, but have grown to be great, and while the first thought was that they would never carry anything but passengers, and would never run any distance except within the city limits, we now note that the advantage is so great, based not upon figures but upon experience and observation, that we are just upon the eve of extending these advantages heretofore enjoyed by only a few of the people to a greater number, and I think to practically all.

But franchises have been given in the great cities, and those who enjoy the franchises are more willing to keep them and enjoy the benefits than to extend the benefits to others. They are not the ones who are asking anything by way of a more liberal policy or a universal system, but there are other people and other companies outside who have built already, and more about to build, and when they come up to the great cities they come up to the door of difficulty. They are met there by the consolidated street car companies who claim to have received exclusive grants which they expect to hold on to and so prevent the use of the streets of the cities by outsiders.

I claim that the laws should be such as to enable those with the cheap and rapid means of transportation, when they come up to the city to be met there with the same liberal policy and to go through the streets of the city, in so far as is compatible with individual rights, as they have always done before by free means of transportation. One question is, how can we get this? You will find that these electric roads must be projected in the main from the centers of population. There are reasons that make it necessary that all these great means shall radiate from the great centers of population, so that we must have some sort of means to acquire these rights and privileges in order that we may avail ourselves of the first step in this great development which, as I said before, I am satisfied will become universal.

As for myself, I favor the amendment of some of the laws governing these things so that they shall take notice of the facts as they are and as they are to be, rather than confining ourselves to the laws enacted and conceived in the day of small things when the limit of this kind of transportation was simply the limit of the horse car to carry people from their doors to their places of business in the center of the city, when three or four miles measured the utmost limit to which they could go. The day has passed by when that means is sufficient. When we come up to the city instead of being met with the unfriendly proposition that we cannot pass through the streets of the city without the leave of this or of that man, think the law should be so changed that by leave of the public authorities we might enter in.

I am not asking that laws should be so changed as to lead to this liberality without the consent of those in authority, but I do say that in my judgment the day has passed by when we should be obliged to ask the consent of a single individual or set of property owners in order to have ingress and egress into and out of a city by this new, rapid and wonderful means of transportation. In short, we are met with these difficulties, viz: When we come to the boundaries of the cities with the desire to enter, we must either use existing tracks or build others. The statutes of the state authorize suburban companies to make traffic contracts with the existing street railroad companies, but the law places no sufficient restrictions upon what such companies may require of us and the exorbitant requirements of those companies must be met by an increase in rates which the traveling public must pay; all of which goes into the treasury of those companies in which you have no interest and by which you are in no way benefited—this is simply another means of increasing the wealth of the cities at the cost of the country.

Now, as to the other alternative, that is: The construction of a road along and

upon the streets of such cities. In undertaking to do this we at once encounter the opposition of the existing street railroad companies, for the reason that we will come in direct competition with them; first, by carrying into the heart of the city all of the rural traffic, and second, by receiving our fair share of the city traffic. Experience has taught all those who have ventured upon the building of interurban roads that this opposition is very great, and under existing laws practically insurmountable, and that one of the most formidable weapons in the hands of this opposition is the existence of a law, which in its enactment no doubt was intended as a safeguard to property owners and the public, but which owing to the changed conditions defeats its purpose and allows companies already in possession to entrench themselves behind it and successfully block the entrance of these new companies. I refer to the law that requires companies to get the consent of a majority of owners of property upon the street or highway.

A little thought on your part will readily enable you to see how, through the influence of large and powerful street railroads, the requisite consents will be withheld, and what does the withholding of these consents mean? It means that the few persons who own the property abutting on the streets or highways have the power to say whether or not an enterprise shall be promoted which will bring large benefits to all the people who live in the vicinity of such streets or highways. And more, it means that when the interurban roads come to the city boundary a few property owners owning property fronting upon a few of the streets in such city have it in their power to say that the roads which will benefit the people living in the country surrounding said city shall not be permitted to enter, and thus a few property owners in such city, possibly a dozen or more, may prevent all of the people living within twenty or thirty miles of such city, or even a greater distance, from having the benefit of this rapid and cheap transportation—and thereby the few may perpetually injure the many, and the many have no remedy—and that too in the face of the fact that the laws have already made ample provision whereby the railroad companies are required to fully compensate abutting property owners for any damage they may sustain by reason of the placing of a railroad in the street or highway in front of their property, and the supreme court has held that such property owner can enjoin the building of a railroad until such compensation is made.

HIGHWAYS FOR PUBLIC USE.

It should be understood that the public highways are built for the public use—and that means all the public and not simply those who live upon any particular highway, and it is only that public use which justifies the right of eminent domain whereby private ownership must give way to public use in order to secure the greatest good to the greatest number. There is no greater good that can be secured to the general public than that which results from free, easy and economical means of communication and transportation among the people, and it is in recognition of this principle that the public authorities have been authorized to levy taxes upon the property of the people in order to build up the roads and streets and bridges and viaducts that have become so numerous and contribute so much to the end in view. These roads and streets and bridges and viaducts being built by the public and for the public and with untold millions of the public money, are forever dedicated to the public use and whatever of private right may remain in these highways is only that residuum which is not needed for the public use; and that public use is only limited by public necessity. In a country road where the public business is little, the residuary right of the abutting owner is greater than in a crowded thoroughfare of a great city where the public use is great and constant, and the residuary right of the abutting owner proportionally less. As for instance, on a country road loaded wagons may be allowed to stand many hours upon the highway without

infringing upon the public right if they are so placed as not to obstruct the passage of the few vehicles that might pass along. But in a crowded street of a great city such a practice would not be tolerated for a single hour because the greater necessity for the use of the street by the public is inconsistent with such quasi private use. Accordingly all vehicles of every kind and from every place have equal rights to pass over these highways free and unobstructed either by public authorities or private owners. Those living in any vicinity, whether it be sparsely settled country district or in a densely populated city, have no more right to the public use of the highway in their immediate vicinity than the most distant inhabitant of the country, it being the well established policy of the law to make ingress and egress to and from all places as free and easy and unobstructed as possible.

The public authorities being authorized to levy taxes to build and maintain these highways are also charged with the responsibility of putting them to their best and highest use. What that best and highest use may be is a question that varies somewhat with time and place and is the question of the hour, and in this connection may be considered the special reasons for the special use of the highway in special instances. Having in mind the universal principle that the public highway exists for the public use, the public officers have sometimes thought that a more beneficial use would result by improvements which the public were either unable or unwilling to make. They have accordingly authorized, in many instances, the improvement of the highways through special agents known as toll road companies, or toll bridge companies, but in such cases the companies become and remain the agents of the people who are still the owners of the highway and who compensate their agents for the improvements put upon the public property by a consideration to be paid in tolls for a limited time. This principle of agency in the improvement of the highway has also been applied to that modern means known as the street car, whereby companies have been authorized to make the desired improvement without cost to the public, but to be reimbursed by taking a species of toll, for a limited time, the toll being sufficient, in this case, to not only repay the cost of the highway improvement, but also the cost of transportation over it, and in both cases the special agent, in order to make sure that his compensation shall be sufficient to indemnify him, is given a monopoly for a limited time of the traffic which the improvement is designated to benefit. In addition to this in case of the street car improvement a majority of the abutting property owners are empowered to give or withhold their consent to the proposed improvement before it can be authorized. This is not in consequence of any inalienable right that the abutting owner has in the street as against the public use, for if it was the consent of all would be required instead of the consent of the majority, but it is in consequence of the fact that when such improvements were first proposed the only purpose of them was to serve the residents living along the streets where such improvement was contemplated. The original lines were short and the benefits were largely confined to the abutting owners, therefore it was reasonable that a majority of those who were supposed to be interested in and benefited by this improvement should be empowered to advise and consent as to the location of these lines. But when the reason of a law ceases the law itself should cease, and with the extension of these lines to longer distances by the application of electricity instead of horse power a multitude of other individuals became interested in the location of lines and in the use of the streets for such purposes, and what was originally intended as a beneficial influence in the location and construction of these lines has become an unbearable hardship upon those who wish to secure the most direct routes of travel by the cheapest means of transportation. The same reason which gave a majority upon a given street the power to determine as to this improvement when they were the only ones interested in it or benefited by it should now transfer that

power to the greater number who have become interested in and benefited by this new and wonderful means of transportation. The number so benefited has now become so great as to include the entire body of the people, therefore it is a majority of that number that should determine the use of the highway and not a majority of any few who may be the owners of abutting property upon any street through which the multitude may wish to pass by the most commodious means. The will of the majority in such cases has generally been represented by the will of their public agents and that should continue to be the case. Those who think that the abutting owners of property have any right in a street adverse to its public use, in the most commodious manner according to the original purpose of its dedication, have mistaken an excrescence upon the law for law itself, and the only way in which we can carry out the great principle of public property for public use by virtue of which the highway is dedicated is to allow the voice of the people, speaking through their public agents, to determine how and when and where these new improvements shall be made.

When it is clearly seen and understood that the only authority which street car companies or toll road companies have in the highways, is the authority of an agent and that the only consideration which ever permitted their existence is the great one of cheapening the cost of transportation, it will then be seen that every unnecessary requirement placed upon the agent is an unnecessary burden upon the people themselves. Therefore all propositions to require electric car companies to pave streets or to pay track tax or a percentage on their gross earnings, are in the nature of artificial obstructions which must add to the cost of carriage and therefore diminish the value of the improvement to the people. And this is especially true of the class of electric roads under consideration, for if the cities use their power to require these roads to pay a track tax, a percentage on gross receipts, and to pave their streets, the cost of all this must come out of the earnings of the road, which means increased rates, and you are thereby required to bear a part of the burden of their taxes and to pay for paving their streets, which in no way benefits you, and that too when it is a known fact that the operation of these roads does not in any way injure or wear the pavements.

It is erroneous and harmful on the part of the public agents whoever they may be or wherever they may be to substitute artificial obstructions in the place of the natural ones which invention and experiment have overcome and thereby neutralized to any partial extent the advantages of cheap transportation which alone induced the people to authorize their agents to make these new and useful improvements. What the people want is not rent for the streets, but a render of service by their authorized agents; and the service which they require is cheap transportation; and the greatest service is the cheapest transportation.

Let me say in conclusion that those who are looking for relief to the stone roads, models of which the ancients have produced, are looking backward like Lot's wife when she turned to stone, and with about the same effect so far as any beneficial results are concerned. For all those who are duplicating such roads are putting "new wine into old bottles." And in the end it will be seen in this as in so many other matters that "the stone which the builders rejected has become the head of the corner."

President Clark: Time will not permit any discussion on this address at the present time. We will now listen to an address by Dr. Canfield, president of the Ohio State University.

"ANY FOOL CAN FARM."

ADDRESS OF PRESIDENT JAMES H. CANFIELD.

Mr. President and Gentlemen.

I feel a little like asking you, gentlemen, to look around you before I begin, to make sure that there is no officer of the Humane Society present. I do not want to be placed under arrest for prolonging the exercises of the afternoon to the point of actual cruelty to animals. If you are sure that I am safe upon that ground, then I would like to say that it seems to me that I come this afternoon very much in the character of a certain musician of whom I once read. A great musician, a really great musician, drifted one afternoon into the organ loft of a great cathedral. Being recognized by the local organist, he was asked if he would not take his place at the organ and play what was known as the postlude, the little piece that is played as the people go out after the benediction is pronounced. He took his place at the organ and when the benediction had been pronounced he began to play. Nobody rose; nobody started; such was the mastery of the keys that they all remained in their places. Such was his eloquence upon that instrument that they forgot entirely that the services had closed. Finally the organist said, "Here, why don't you play the postlude? You don't know how to do this. You get down off there and I'll play them out in two minutes." (Laughter.) I am going to play you out in about two minutes.

I have suffered a good deal because of the unwise publication of the title of what little I have to say this afternoon. I have been asked whether I propose to present a short sketch of my past experience. I have been questioned as to whether I was going to detail here the way we did it in Kansas and Nebraska, the two states that I had the honor to represent for nearly twenty years. I have been asked a great many uncomfortable things in regard to this "talk" and so I feel bound to tell you where I got my text. It is not one hundred years ago, I do not know that it is ninety-five, and I do not know that it is over a thousand miles from this place, that I was passing in the corridor of a hotel which was quite unusually thronged just at that time with gentlemen of distinction (I think that is the proper title to give them.) As I passed through toward the doorway, I heard in tones of contempt and disgust and possibly distrust, the sentence from which I choose to speak this afternoon: "Any fool can farm."

Now, that was such an original idea and it was expressed in such a forcible way, that I stopped and turning, looked at the man to see who he was. I backed away against a column in the rotunda of the hotel and looked at that man for some time. He was a well-dressed man, apparently an intelligent man. He had a commanding forehead and a commanding beard, both of which mean a great deal in this world. (Laughter.) He seemed to be a man of the world. He seemed to have been among men and seemed to know the ways of the world. I should have said that he was an experienced man in many directions. Presently a gentleman whom I knew passed me and I said to him quietly, "Do you know who that gentleman is?" "Yes," he said, "that is Mr. So and So." I said, "What is he?" "He is an attorney," he said, "he is a candidate for the legislature from a certain district." Now, I recalled that this was an agricultural district, and wondered if at home he talked about his constituents as he did when abroad.

Now, it seemed to me that under the circumstances, that was a statement which I might very well take up and present, if not controvert, at this meeting of gentlemen who are engaged in agriculture. First, I want to know what that man had in his mind when he spoke of a fool. There are fools, and there are fools. There is

no question about that at all. I do not suppose for a moment that he meant the man whose mind is blank, whose eye is expressionless, whose face is immobile, who walks with open mouth and hanging tongue, who seems to be the saddest imitation of man upon the earth. I do not suppose he meant the idiot. Nor do I suppose he had in mind what may be called Solomon's fool. Solomon talked a great deal about fools. Solomon's fool was a smart fool, a fool who said "There is no God," and chased after women whose feet went down to hell, and did other things equally as bright and commendable. That was Solomon's fool; what we call in common parlance "a smart alec."

I do not suppose this gentleman had that conception. What I think he had in his mind was this: The unintelligent, the uninformed, the uneducated, the untrained, either special or general; the slow-witted, the blundering, the stupid sort of fellow, who cannot go from A to the end of the alphabet without a break in his reasoning or in his memory and who cannot put two and two together and make four as the result and prove it; that was what was in his mind. It is almost criminal to take your time in asserting that such a man as that can farm, at least in Ohio to-day. Such a man is utterly out of place on a farm in this country to-day and in fact such a man has very little place any where. I am sorry to say it because it may seem harsh and as though I am not in sympathy with such men. Such a man has very little place in the economy of this country to-day, in a country with a school-house in walking distance of every home—the most marvelous thing that is known in this century. It is a thing that we do not often stop to consider. A country with sixty to sixty-five million of people with a school-house with an open door, supported by the government, within walking distance of every home. In a country like that, a country in which the state has a complete system of education, from the very lowest grade up to the high-schools of the townships and cities and on to the universities, through to graduation,—in a country that gathers at its universities the most expert men who are continually furnishing information, the latest and best, on topics of interest to you; in a country with the press at your door every morning with the news of the day delivered to you fresh at your tea-table, in a country with the telegraph and telephone and the electric and steam car; in such a country, a man who by nature or neglect remains slow-witted and careless and untrained is lost in the struggle. It is in the very nature of things necessary that that should be true. We may sympathize with him just as much as we please, and we ought to sympathize with him a great deal; but this world, our part of the world, is moving on too fast to stop and wait for him to keep up with the procession. He might possibly do very well, very fairly and very comfortably, in the day of the ox cart, but he does not do very well in the day of the trolley car. In that day he might live in a fairly comfortable way, and occupy a fairly reputable position; but to-day, gentlemen, with all the advantages that are offered to him, with the riches of the past poured out for him, with the state behind him anxious to serve, with every possibility lying within his power for the mastery of all things,—to-day if he fails to master them he is lost at the beginning of the struggle.

That is true of farmers, because it is peculiarly true that in farming there is a certain kind of individuality and a certain kind of intelligence needed that is hardly found elsewhere, in the mastery of other occupations or other professions. Let me give you a single illustration. In a great steel foundry there are certain men whose simple duty it is to watch intently the heated metal and when the refuse comes to the top of a huge caldron, to skim it quickly off. That is their sole occupation. I have been again and again in great machine shops and found men who were called expert workmen assigned to do a single thing; while it did require a large amount of experience and a large amount of special training in that special direction, there was no demand for general intelligence, and the workman was him-

self constantly narrowed and shriveled and weakened by the very conditions under which he was obliged to labor. He was simply a cog in the vast machinery. That was all. If we regard the free play of the faculties of the mind, there was hardly a similitude left there of that which makes a human being to-day.

In connection with this work of agriculture more than anywhere else, is this demand for the free play of all the faculties and powers of the mind and body. Let me mention three or four lines in which what I have said is true. First, if you believe in the mastery of all the conditions of production, see how absolutely essential it is that the man have that large intelligence and very quick mind. There is a certain kind of alertness that would not be found as absolutely necessary in any other trade or calling, or even in the learned professions. See how necessary it is that he should be able to understand and read signs and indications, that he should be able to catch quickly what nature has to tell him. Just stop now for a moment in the midst of your busy lives, finding yourselves face to face with the question of production to-day in your own line, and think what it means to each and all of you; the mastery of the conditions of the soil, the wisest and best conditions of breeding and cross-breeding, of fertilization, of problems which you can multiply certainly by hundreds and still find ramifications and different lines of thought and activity. How much more is required to-day than was required forty or fifty years ago. What is the market to-day, gentlemen, in which you buy and sell. There is no longer any question that it is the market of the world. You are not able to limit your buying and selling to your immediate locality as you were able to do only a few years ago. Then of necessity you were limited to certain localities. It was enough if you knew the market of your nearest town, or at least the largest town in your state. It was enough if you understood the conditions of buying and selling in your vicinity, practically competing with your neighbors and them alone. But to-day the markets of the world are more and more determining just what you shall receive for the products of your farm. If it is not true of the world, it is true of the United States, which in itself is a magnificent empire, one of such diversity of interest, of such diversity of conditions, that it is impossible for the narrow-minded man and slow-moving man to take hold of the great questions and decide them in any satisfactory way whatever. He cannot do it. He must be quick about it, wide between the eyes: he must have a good memory and be able at all times to take advantage of that which is last and latest. How can a man who does not know how to use the telephone and telegraph and telegrams, how can a man who does not know the value of the daily papers, but who receives all his information through the weekly paper compete with the active and aggressive men? The man who stays upon his farm during the entire week who only comes to town on Saturday to market something, puts himself into the hands of men who are in communication with the world. He puts his weekly paper into his pocket, goes home, does his chores on Saturday night, rises the next morning, gets his work off his hands, gets his wife to help him into his clean clothes, then sits down behind the kitchen fire, pulls out his weekly paper and gets the news. Why it is as far behind the times, as far as practical value to him is concerned, as when on the eastern coast it was six weeks and even longer before one knew what was being done across the water. No man can live to-day in any true sense of the word who touches the world as carelessly as that. How can such a man face all the conditions that are continually confronting him if he is unable to reason clearly and quickly and accurately from premise to conclusion? Think of the thousand and one problems that are the questions of the day for those who like to sit down and talk about them, questions as, what is a day's return for a day's labor, questions that mean what you shall receive this month and next month for your labor, these questions of the day which touch you so closely and so sharply and so injuriously if let alone;

and then think of the fact that so very many of us seem perfectly willing to turn them over for solution to that marvel of marvels in this country the gentleman who has gone to congress. Just fancy how unwilling we are, often positively unwilling, to exercise our own thinking powers and our own intelligence and how completely willing we are that he should think for us. We are constantly relegating these things to certain places and people as though they did not belong to the whole people of the country. It is simply impossible that this country can be and remain what it should be, if the men who are connected with the soil, the foundation of all prosperity of the country, are to remain, or fancy that they can safely remain ignorant.

There is only one more direction in which I urge upon you a certain kind of intelligence which we do not at all possess. Men in this country of a free speech and free instruction should make themselves masters of their mother tongue. A man should be able to speak upon his feet, should be able to write and should be able to read. I do not mean write his name. I do not mean sign his name to a deed. I do not mean to be able to read as I have seen some gentlemen read, by spelling the words as they go. I mean that he should be able to take from the printed page the thought of another and hold it. There are very few of us who can do that as we ought to do it. I speak of this mastery of ones mother tongue because it is the way in which great ideas and lasting treasures of the mind and the best results of investigation, and the real scientific thought and investigation, are conveyed to us. You can no longer declaim against book learning in the day when book learning means the mastery of the best thoughts of the best men, and the best thoughts of the best men are perpetuated from day to day and from year to year and generation to generation by the printed page. So a man is a weak man to-day, pitifully weak who cannot stand up and say what he feels to be true. I once sat in an audience of technically trained men and one was reading a paper. He read statement after statement which I felt was not true, but I was not technically trained and could not answer it. Beside me sat a technically trained man who said, "That fellow is lying. He has not stated a single word or statement yet that cannot be controverted." I said to him, "Get up and say so," and he said, "I can't." He lost that which would be of inestimable value to him, and he had a sense of weakness which must have cut him to the very heart. No man in this country ought to be so ill-trained and ignorant that he cannot stand in the presence of his fellow-men and speak pointedly and directly on any question that is of interest to his fellow-citizens and to himself. He should master his mother tongue. I am positive that the "fool" cannot farm; and I am positive that the welfare of this country hereafter, as in all the past, will depend largely if not entirely upon the intelligence, the quick wittedness, the strength of purpose and the wisdom of counsel of those who touch the soil as you touch it every day. (Great applause.)

Here the chair called for the report of the Committee on Resolutions, and Col. J. H. Brigham read the following:

REPORT OF THE COMMITTEE ON RESOLUTIONS.

The committee on resolutions begs leave to make the following report:

First—We heartily endorse the suggestion in the Governor's inaugural address to the General Assembly relative to agriculture, as follows:

"In my opinion the General Assembly of Ohio should vouchsafe to the agriculturists the most cordial respect for their part in the development of Ohio and

should give every consideration to the propositions they may advance in the hope of bettering their condition."

We also endorse his recommendation for a purchasing committee for furnishing all supplies for the state institutions. We also recommend that the county commissioners of each and every county contract all supplies for the different offices in their respective counties.

Second—From information by the press we believe there will be strenuous efforts made to repeal, modify and weaken the pure food laws of Ohio, and we recommend that on this question and that of taxation there be no changes that will increase the burden to the agriculturist; but have the farmer, manufacturer and all other interests bear equal and just taxation.

Third—In view of the large and constantly increasing use of shoddy and other fraudulent substitutes in the manufacture of yarns and fabrics, of the injustice this imposes upon innocent purchasers and the depressing effect this displacing of almost one million pounds of wool has upon the wool growing industry, we urge upon the legislature at its present session the passage of a law requiring all manufactures purporting to be of wool, to be labeled by the manufacturer with the kind of materials and the per cent. of each employed in such manufacture, and to be subject to an inspector appointed by the state.

Fourth—We believe that prosperous times will never be enjoyed by our people until the present uncertainty in relation to the future policy of the government on great economic questions is definitely settled and confidence in the stability of legislation is restored. Prosperity must commence at the foundation, which is agriculture. Hard times will continue until the farmer is fairly compensated for his skill and labor on the farm. We therefore ask of the state and national legislators careful consideration of all laws affecting this great industry, the repeal of those which bear inequitably upon the farm and the enactment of such as will foster and protect this great foundation industry.

Fifth—We earnestly commend to the General Assembly the above suggestions for such legislation as may be required to reach above results.

Respectfully submitted,

J. H. BRIGHAM,
A. C. WILLIAMS,
C. S. CHAPMAN.

By general consent the resolutions were taken up and considered seriatim. Assistant Secretary Fleming here re-read the first resolution, which was adopted without discussion.

Mr. Fleming again read the second resolution.

Col. J. H. Brigham: This subject had but a few moments for consideration. We gave some time to the consideration of these matters, but they are not all they ought to be. We had rather hoped that somebody would have a word to say. I believe that that first resolution would save several hundred thousand dollars to the tax-payers of Ohio if it were adopted and carried out. In the state, in different ways, I have had some connection with the affairs of county and state and I believe that it would save largely. Now every one present ought to know if he reads, that there is to be an organized effort made upon the part of great interests in Ohio to modify and change some of the legislation that is satisfactory to the farmers of Ohio. They propose to amend laws that

we wish to stand; and therefore, I would be glad if the members of this convention would not only adopt these suggestions, but have a word or two to say. You understand perfectly well that the legislators are sent here to represent the people, not any one interest, not agriculture or manufacture or mechanical interests, but all interests, and if they do their duty thoroughly and honestly they ought to meet the approval of those who send them here, but if they are lacking information, or because unable to resist selfish pressure, or pressure from sources where selfish interests are involved, they will meet and deserve the condemnation of the people. Now, I have long felt as a farmer, that, as representatives of the greatest industry in state and nation, we have failed to exercise the privilege that belongs to every American citizen, to discharge the duty that belongs to every sovereign ruler that holds in his hands that mighty weapon the freeman's ballot. Now the purpose of calling attention to this resolution is to awaken their interests in order that they may be ready for the contest when it comes. I say to the farmers and others interested that without organization we are without the means of making our influence felt. If you stay at home and sleep on in a Rip Van Winkle sleep, before you know it your burdens will be doubled. The time has come when every industry in this country must organize and study its interest and make the greatest preparation to resist every inroad and every movement that encroaches upon that interest. I therefore hope that this resolution will receive earnest consideration and that this warning to the farmers of Ohio will not be unheeded. Members that are sent here desire to do their duty, all of them, but the interests which sit down and let the day go by, when they can be heard, and their voices and influence be brought to bear,—if they do that they will suffer because of their neglect and they will be entitled to no sympathy if they do.

The resolution was adopted.

Here the Assistant Secretary again read resolution No. three.

Col. Brigham: That was presented to the committee and we gave it consideration, and we believe there is great imposition being practiced upon the consumers and that this great industry in which the farmer is interested is seriously injured because of the shoddy goods imported from the pauper labor of Europe, and we believe that some means should be devised to prevent the use or at least the sale of it as the genuine woolen goods made from pure wool.

Mr. S. H. Ellis: I think the purpose of the resolution is all right and I agree with it heartily, but very little of the yarns we use in Ohio is manufactured in this state, and how a law passed in this state could apply to the manufacturer in Massachusetts or Rhode Island is more than I can understand. It seems to me that a recommendation that this subject be referred to Congress and that we ask for such legislation by Congress as will protect the users of these fabrics.

Col. Brigham: My understanding is that such regulations must be passed by the state and cannot be passed by the general government; at least the state does undertake to control the manufacture of oleomargarine. It is required to be stamped throughout the state.

Third resolution adopted by unanimous vote.

Resolution No. four was then read.

Col. J. H. Brigham: I want to say a word on that. You all know very well that there are interests in the state that keep men constantly in their employ to stay about the legislature when it is in session, who are liberally paid for their work. They are sent here to secure certain legislation and to defeat other legislation. The farmers as a rule do not employ persons to represent them. They trust their entire interests in the hands of the legislators. I think they should bring their influence to bear upon men after they are elected. I think they ought to do that, but we know perfectly well and the legislators know perfectly well, that the great mass of the people do not do this; and the purpose of this resolution is a direct appeal from the farmers here, if it is adopted, to the legislators to look very carefully into the laws that are now on the statute books and those that may be proposed and see to it that if there are laws that bear unjustly upon the farmers and upon agriculture, that they be amended or modified or changed or repealed, and that they see that no law is enacted that is not fair and just and equitable to the great mass of the people, who have not been accustomed to come here and press themselves upon their attention.

Mr. W. I. Tenney: I do not know that I can add a word to what Mr. Brigham has said. I fully and heartily endorse every word he has said. I think every farmer realizes it as a truth that every other interest is looked after more efficiently than that of the farmer, and in our present financial condition to-day it seems to be necessary to change and alter our tax laws. That being the case it certainly seems to me that it is to our interest to look after our representatives and talk with them, and if necessary have somebody here to represent us. We feel that probably no other business is as thoroughly and effectually taxed as that of the farmer. The farmer has nothing but that which is visible, and many farms stand upon the tax duplicate at three-fourths of their value. I feel it is our duty to look after this matter and not just trust to our representatives when they are beset on all sides by organized bodies who are claiming to-day that they are overtaxed. They are claiming that the laws bear heavily upon them. This may be true in certain directions. If it is, it should be regulated, but I want our representatives to feel that they should all the time have in mind the agricultural interests of the great State of Ohio, and if any changes are made they should be made with that constantly in view, and that while we are not there lobbying, we are watching almost constantly and as our interests are left in their hands, we demand that they shall look after them carefully and earnestly, that no law shall be passed that will bear more heavily upon the farmers than any others.

Col. Brigham: I want to call attention to another matter because you all know that the time is going to come; for the manufacturers and other great associations have agreed to bring it up here, when a resolution will be pressed for passage. Now the law that will be sought to be repealed was an act of justice to the farmers. For forty years the manufacturers paid no tax to the state. They were exempt on all their manufactured products. Their warehouses might be full of machinery and it went untaxed. If the farmers bought it the next day, and the assessor came around it would be taxed. The Rawlins law intended to correct that. We thought possibly our friends had escaped taxation so long they would naturally desire to continue to escape. That is human nature. I am not finding any fault with them that they did not desire to take up a burden that we had carried for long weary years for them. I simply want to call attention to the fact that it is coming up again. After that law was enacted it was not fairly tried when there was a movement to repeal it. I came here by mere accident, and saw in public print that the manufacturers were to meet the committee in this Senate chamber to consider the Ford Bill, introduced by a member from Cincinnati, for the repeal of that law. I telegraphed to three farmers in different parts of the state to take the first train for Columbus. When we met in the Senate chamber there were millions of dollars of capital represented and hundreds of manufacturers, and there were just three or four farmers here. The manufacturers claimed it was double taxation,—and we all know that is wrong. They made that claim and based their battle upon it, and yet the ablest manufacturers in that body, before the discussion ended, admitted that there was nothing at all in the claim. It was not double taxation and those three or four farmers that came here to represent the interests of Ohio farmers by bringing out these admissions and by making a showing from the farmers' standpoint prevented, I believe, the repeal of that law. I make this assertion that it may remain in your minds, that the ablest representative of the manufacturing industries in Ohio admitted that there was nothing at all in the claim that there was double taxation.

H. A. Halverstadt: The farmers of the State of Ohio, as in other states, have such implicit confidence in those whom they elect to represent them that they simply stay at home careless and indifferent and expect them to do just what is right, and we have been fooled once or twice in this respect, so that we think it is right and proper that we should express ourselves, whenever opportunity offers, in such a way that we cannot be misunderstood by our representatives in the legislature. This is an opportunity which is afforded the farmers of the State of Ohio, as we have representatives here from at least two-thirds or more of the counties of the State, and it is right and proper, I believe, that we should be heard and that we should say a word or two either in favor or in condemnation of the results as they are presented. I do not want to drive any capital out of the state and I would love to see capital locate in the state at the present time,

but it does seem to me that I, as a farmer, cannot afford to bear more than a just share of the taxation for the support of our present state government. We feel that we have done it, as Brother Brigham has said, but because we have borne it so mildly in the past does not say we shall continue to do so or that we are obliged to do so. Here we have listened to these eloquent addresses this afternoon, the farmers have been lauded to the skies, we might say, for the knowledge and ability that is required for a successful farmer, but on the other hand we learn, in fact we know by personal experience, that the farmer receives but a mere pittance compared with that which is received by men in other professions. Now, let us stand up for our rights boldly and nobly and I believe this legislature will respect them; and let us make them feel we still trust them and don't want them to forget that when at our daily work they are here to represent us.

Mr W. S. Miller, Coshocton: I am in favor of this resolution and I think it is time the farmers of Ohio should arouse themselves in order that it be possible to subsist at all. We have been too negligent in this respect during the last twenty years in Washington, as well as here in Columbus, or the condition of the farmers here in Ohio would not be what it is to-day.

Fourth resolution was adopted.

Fifth resolution was here read and adopted without discussion.

Mr. Crofts: I have in my hand a copy of a resolution which I wish to have presented to this convention. If there is no objection I will read it and offer it as an amendment to the report of the committee on resolutions.

WHEREAS, It is for the best interests of the State Board of Agriculture that the membership be fairly distributed throughout the state, giving each section its just representation; and

WHEREAS, The present mode of electing members fails to do this and has resulted in depriving large sections of the state of representation and given to others an undue portion, therefore, be it

Resolved, That we request the legislature to enact a law that will give to the different sections of the state representation on the State Board.

Resolved, That it shall be the duty of the secretary of the State Board to prepare a bill (and have it introduced in the present session of the legislature) dividing the state into ten agricultural districts and giving to each district one member of the State Board.

Mr. Crofts (continuing.) I want to say what I say, briefly. This resolution indicates that the present mode does not give a fair representation to the different sections of the state, and if that is true I think as representatives of the different sections of the state, we will agree that it ought to be changed in some way so that all portions of the state would be fairly represented in the Board. We come here as representatives from every county in the state. Each year we elect five new members of the Board. Now, we will all admit that there is no block of nine counties in the state but

that could furnish one good member of the State Board. Now, in order to see whether the present plan is working satisfactorily and right and just to all parts of the state we have only to look at a map showing where the different members of the Board are at present located. Now, I desire to say I have no interest in any member, no objections to any. I admire the work of the State Board of Agriculture, but there are large sections of the state that have no membership. These large squares on this map show the different counties that have members on the State Board. Here are four counties in the centre of the state, Franklin, Union, Marion and Morrow, counties that join each other, that each has a member of the State Board. We go down into the south-western corner, and Montgomery and Hamilton and Clermont each has a member. There are two members in the southern part of the state. One in the north-east, Portage county one, one in Seneca county and in the eastern part of the state we have one in Guernsey county. Here is a block of twenty-two counties in the southern portion of the state that has not a member,—one-fourth of the state. You may draw a line south of Franklin, and across to Guernsey and down to the east side of Clermont and Montgomery, and there are twenty-two counties that have no member. You can draw a line west of Union and to the Lake and across north of Montgomery to the state line and there is a solid block of twenty counties in the north-west, that rich agricultural portion of the state, that has not a member on the State Board.

Mr. C. S. Chapman, Union: On behalf of the committee on resolutions I wish to say this resolution was brought before us and we gave it serious thought and considered that as a resolution submitted by us, it would perhaps cause some reflection upon the candidates that have been nominated here this afternoon. The resolution has merit as well as demerit, and it seems to me that this organization should gravely consider it before we pass upon it. It would practically take out of the hands of this organization the representation of Board of Managers of our state fairs.

We think it might be well to consider it in the future, but on the behalf of the committee on resolutions, I will say, we thought it not best to introduce it at this time. I hope that we will hear from other members.

Mr C. H. Ganson, Champaign: I would say that I do not like to see such things come up. I don't think they are productive of any particular good. This seems to be hardly fair this year, but how has it been in the past? The very counties perhaps that have the representation now did not have them then, and they all belong to the state. The main thing, I think, for the farmers of the State of Ohio to do is to try to get good men, and when we begin to fuss about having a man on the Board to represent a particular section, it does no particular good. I don't care if we do not have any representative in our county. There is one in an adjoining county, and Mr. Clark here is just as near to me as somebody else. I have been connected with farming interests a good many years, and I want

to say that all I care about is that we have the right kind of men. While we are selecting them here I think it would be well to scatter them over the state. We cannot elect a Governor in every county. But so far as I am concerned I am opposed to anything tending toward saying they shall be in ten different districts.

Mr. S. H. Ellis, Warren: It strikes me that if we divide the state into ten districts, it would be legitimate for the men in the districts to say who shall represent them,—select their men. Now, another thing. I think this is the 20th annual meeting of the State Board that I have attended. We have any quantity of men in Warren county who can fill the places on this State Board splendidly, but we have not had a member from Warren county for forty years I guess, and we are happy. I think, Brother Crofts, it would be a mistake to push that measure.

Mr. H. A Halverstadt, Columbiana: I want to say a word: It seems to me that it is just in accord with what this society did several years ago in regard to selecting members of the county societies. Each township to have one member and not more than two, and this was to distribute the members over the county in order that there should not be any considerable part of the county without a representative, and that there might be interest worked up for the county society in every part of the county. Now, it is just the same thing in regard to this. We have just one representative out of some twenty or thirty counties in the north-eastern part of the state and that member's term expires this year and is not re-nominated. I think it would be for the interest of the whole state to distribute the members over the entire state.

Mr. J. W. Pollock, Greene: I am free to admit that there are elements of truth and justice in the claim of this resolution and yet I hope this amendment will not prevail. I do not want to see our present harmonious system broken down in any way. I think it would be unwise to pass such a resolution at this time. I want to congratulate the committee on resolutions for not submitting this with its report. I think this matter might be arranged, and I think it will be in the future. I am frank to admit that there ought to be more attention paid to this here in convention. You know it has been our custom in the past to select men with special reference to the different branches of agriculture. If each branch of the agricultural industry is ably represented that ought to satisfy us all.

A Member: I think there is some reason for offering this resolution, yet I believe, as was said in our meeting of fair secretaries and presidents last evening, that when we become more in touch with each other and better acquainted, we can talk these matters over and look at the geography of the state and then from the men with qualifications who are presented select the men we desire and in this way effect the distribution of the membership over the state. That is the thing that I think is very essential in this organization at this time. We can so distribute the membership of the

State Board without such a resolution as this. For this reason I should vote against the adoption of the amendment.

Mr. Brigham: I think that there are valid reasons why this should not be adopted, and I desire to call your attention to the fact that every county has its representative. They come here and everyone of them has a fair show. Now what do you propose to do in this measure? You are free when you come together to select your Board. Now, why do you want the Legislature to tie your hands? I never asked the Legislature to tie my hands and I don't want it to do it. I do not think there is very much force in the argument that there will be a time when certain sections will have more than their fair proportion, and the members of this body can correct that. If there are sections here getting more than their share, correct the difficulty, but you may, if you pass a law of this kind, come to grief. You may want to do something, and find that the Legislature tied your hands, and tied them at your solicitation. Now, I feel like asking the Legislature to do something that will be good for the farmer. Delegates come to this convention from every county and district in the state. What would you think of a resolution to compel you to select your governor from a certain tier of counties in the state? The representatives of the societies come here in their individual capacities each one of them qualified with equal power; now, why should they not be allowed to exercise that power? I go to a convention with the same power that any other delegate possesses. Why should I ask for a rule to be adopted that would compel me to support somebody that I didn't want? That is a fair illustration. You do send a representative from each county. Suppose that the Legislature were required to select one senator from one tier of counties and another from another. You are asking the Legislature to tie your hands so you cannot do any thing you please. It seems to me that the intelligent men that come up here with equal power and privilege, ought to hold on to the full exercise of their rights just as long as they can. I believe in distribution, but we would better do it in our own way and not ask the Legislature to point out a way. We have too much law and legislation hampering the farmers already. It seems to me that that is a valid objection to this resolution.

And thereupon the motion introduced by Mr. Crofts was lost by a large majority vote.

On motion by Mr. Ganson the report of the committee on resolutions as a whole was adopted.

Mr. P. B. Baldwin: I desire to offer the following resolution:

Resolved, That the thanks of this convention are due to the members of the State Board of Agriculture for the efficient manner in which the state fair, farmers' institutes, crop and weather reports and fertilizer control have been conducted during the past year, and that special thanks are due to

Secretary W. W. Miller for his uniform courtesy, the untiring industry and painstaking care with which he has performed his duties.

Resolution adopted unanimously.

And thereupon the convention recessed till 7:30 P. M.

EVENING SESSION.

President Clark called the convention to order at the appointed time, 7:30, and announced that the first business in order would be the election of five members of the State Board of Agriculture. Mr. V. S. Craig of Guernsey and Mr. George W. Carey of Warren, were appointed tellers by the Chair.

Upon the first ballot the following persons were elected to membership upon the State Board: J. T. Robinson of Seneca; G. Liggett of Union; L. G. Ely, Fulton; H. S. Grimes, Scioto; Albert Hale, Summit.

Upon motion of J. H. Pringle the election of the above gentleman was made unanimous by the convention.

And thereupon on motion the convention adjourned.

Sixth Annual Report

OF

FARMERS' INSTITUTES,

HELD IN OHIO IN 1895-96,

UNDER THE AUSPICES OF THE

OHIO STATE BOARD OF AGRICULTURE,

AND

Proceedings of the Central Farmers' Institute,
held in Columbus, Jan. 14 and 15, 1896.

COLUMBUS, OHIO:
J. L. TRAUGER, STATE PRINTER.
1896.

SIXTH ANNUAL REPORT OF FARMERS' INSTITUTES

Held in Ohio in 1895-96.

The institute season of 1895-6 opened Monday, December 2, 1895, continued thirteen weeks and closed February 29, 1896. One hundred and fifty-seven regular and thirty-one independent institute meetings were held and reports properly made to the Secretary of the State Board of Agriculture, while several independent meetings were held in various parts of the state of which no reports were received at the Department of Agriculture.

The one hundred and fifty-seven regular institute meetings were authorized by the State Board of Agriculture at a regular meeting held October 1st, 1895. Many petitions were filed for the establishment of Farmers' Institutes to be held under control of the Board that could not be granted because of the limited appropriations at its disposal, with which to pay per diem and expenses of lecturers.

It is a source of unmixed pleasure and congratulation to the State Board of Agriculture to be able to record the fact that, practically without exception, all of the Farmers' Institutes held during the institute season of 1895-6, were successful in all that goes to make up interesting, educational and profitable meetings for the farmers of the state.

Farmers' Institutes are accomplishing great educational and material good to the rural population of the state, and the only regret felt by the Board in connection with their holding, is its inability to grant and conduct all the meetings petitioned for, because of the limited means at its disposal.

State speakers and institute officers are agreed in the statement that the popularity of, and the interest manifested in, the Farmers' Institutes are still growing in all parts of the state, and the appeals for more meetings are increasing year by year.

In providing for the holding of so great a number of regular institute meetings as one hundred and fifty-seven, the State Board of Agriculture assumed the payment of considerable expense that could not be covered by the per capita allowance received from the eighty-seven coun-

ties of the state holding Farmer's Institutes; but the members of the Board felt warranted in incurring the expense because of the great good it believed the outlay of money would accomplish.

The Central Farmers' Institute, held under the auspices of the Board in Columbus, January 14, and 15, 1896, was greatly appreciated by many of the most prominent agriculturists, horticulturists and stock breeders of the state, as evidenced by the many flattering compliments paid the management and the unprecedentedly large attendance at each and every session held.

Agreeable to the institute law, the board publishes "such lectures and papers delivered at the several institutes, as may seem of general interest and importance to the farmers, stock breeders and horticulturists of the state" and "a detailed statement of its receipts under the provisions of this act (the farmers' institute law) and the disbursements on account of institute work."

Several times as many most excellent institute papers were forwarded to the Secretary of the Board for publication as could be accepted by the Publication Committee, so that the Committee was forced to reject a large number of highly meritorious papers on account of lack of space, which is greatly regretted by the Board and its officers.

All in all, the Farmers' Institutes held during the institute season of 1895-6, were satisfactory and well appreciated by probably one hundred thousand individual attendants.

The State Board of Agriculture feels greatly encouraged in its institute work and purposes enlarging and improving it in all possible directions. The Board would be greatly pleased to be able to materially increase the number of institute meetings to be held under its management and it indulges the hope that it may do so in the near future.

By direction of the State Board of Agriculture.

WELLS W. MILLER, *Secretary.*

FINANCIAL STATEMENT.

The following statement shows the receipts and disbursements of the Ohio State Board of Agriculture on account of Farmers' Institutes, held under the law of April 26, 1890, for the season of 1895 and 1896.

RECEIPTS.

Amounts collected from the counties on the basis of two mills per capita, being the State Board's proportion of the five mills per capita allowance provided by the law for the maintenance and support of county institute societies in Ohio:

Adams County.....	\$52 18
Allen County.....	80 00
Ashland County.....	44 44
Ashtabula County.....	80 00
Athens County.....	70 39
Auglaize County.....	56 20
Belmont County.....	80 00
Brown County.....	59 80
Butler County.....	80 00
Carroll County.....	35 13
Champaign County.....	53 96
Clark County.....	80 00
Clermont County.....	67 10
Clinton County.....	48 48
Columbiana County.....	80 00
Coshocton County.....	53 40
Crawford County.....	63 85
Cuyahoga County.....	80 00
Darke County.....	80 00
Defiance County.....	51 54
Delaware County.....	54 38
Erie County.....	70 92
Fairfield County.....	67 88
Fayette County.....	44 62
Franklin County.....	80 00
Fulton County.....	44 04
Gallia County.....	54 01
Geauga County.....	26 98
Greene County.....	59 64
Guernsey County.....	57 29
Hancock County.....	80 00

Hardin County	\$57 88
Harrison County.....	41 66
Henry County.....	50 16
Highland County.....	58 10
Hocking County.....	45 32
Holmes County.....	42 28
Huron County.....	63 90
Jefferson County.....	78 83
Knox County.....	55 20
Lake County.....	36 47
Lawrence County.....	79 11
Licking County.....	80 00
Logan County.....	54 77
Lorain County.....	80 00
Lucas County.....	80 00
Madison County.....	40 11
Mahoning County.....	80 00
Marion County.....	49 45
Medina County.....	43 48
Meigs County.....	59 62
Mercer County.....	54 44
Miami County.....	79 51
Monroe County.....	50 35
Montgomery County.....	80 00
Morgan County.....	38 28
Morrow County.....	36 24
Muskingum County.....	80 00
Noble County.....	41 50
Ottawa County.....	43 95
Paulding County.....	51 86
Perry County.....	62 30
Pickaway County.....	53 92
Pike County.....	34 96
Portage County.....	55 74
Preble County.....	46 84
Putnam County	60 38
Richland County	76 14
Ross County	78 91
Sandusky County	61 23
Scioto County	70 75
Seneca County	80 00
Shelby County	49 41
Stark County	80 00
Summit County	80 00
Trumbull County.....	80 00
Tuscarawas County.....	80 00
Union County	45 72
Van Wert County.....	59 34
Vinton County	32 09
Warren County	50 94
Washington County	80 00
Wayne County	78 01
Williams County	49 79

Wood County	\$80 00
Wyandot County	43 44
Collected from Defiance County for 1894-5.....	\$51 52
Interest on above.....	3 98
	<hr/> 55 50
Collected from Hamilton County for 1894-5.....	80 00
Interest on above.....	1 77
	<hr/> 81 77
Total	<hr/> \$5,375 88
Hamilton County not yet paid for 1895-6.....	80 00

DISBURSEMENTS.

For per diem and expense of lecturers as follows:

Agee, Alva, Cheshire, five weeks.....	\$274 69
Brigham, J. H., Delta, five weeks and two days.....	271 00
Begg, John, Columbus Grove, three weeks.....	155 05
Brown, Waldo F., Oxford, four weeks.....	189 04
Burkett, C. W., Columbus, (no per diem), two weeks.....	53 60
Chamberlain, W. I., Hudson, six weeks.....	315 70
Derthick, F. A., Mantua, five weeks and two days.....	249 57
Ellis, S. H., Springboro, five weeks.....	252 22
Ellis, E. C., Crestvue, five weeks.....	278 95
Elliott, E. E. Morning Sun, two weeks and two days.....	95 90
Farnsworth, W. W., Waterville, two weeks and four days.....	120 75
Foreman, H. M., Waterford, two weeks.....	89 55
Gibbs, W. D., Columbus, (no per diem), two weeks.....	39 60
Green, W. J., Wooster, (no per diem), two weeks.....	39 95
Greene, J. F., Sandusky, four weeks.....	199 75
Hickman, J. F., Wooster, (no per diem), two weeks.....	57 95
Hunt, Thos. F., Columbus, (no per diem), two weeks.....	41 35
Hurst, S. H., Chillicothe, three weeks.....	147 66
Kellerman, W. A., Columbus, (no per diem), two weeks.....	44 45
Lawrence, G. E., Marion, two weeks.....	78 00
Laylin, T. C., Norwalk, two weeks.....	83 64
Lazenby, W. R., Columbus, (no per diem), two weeks.....	33 50
Likens, W. H., Caledonia, two weeks.....	90 70
Longenecker, Theo. F., Dayton, four weeks.....	195 29
McKelvey, A. T., St. Clairsville, six weeks.....	332 44
Palm, J. H., Lexington, two weeks.....	85 64
Selby, A. D., Wooster, (no per diem), two weeks.....	46 39
Scott, Geo. E., Mt. Pleasant, three weeks.....	153 85
Shawver, J. L., Bellefontaine, two weeks.....	103 75
Thorne, C. E., Wooster, (no per diem), one week.....	13 97
Todd, S. H., Wakeman, five weeks.....	244 90
Webster, F. M., Wooster, (no per diem), two weeks.....	51 55
Williams, C. G., Gustavus, three weeks.....	168 65
Wing, J. E., Mechanicsburg, two weeks.....	97 80
Thompson, W. O., Oxford, (no per diem).....	23 75

\$4,720 55

MISCELLANEOUS.

Brown, Frank I., reporting Central Farmers' institute meetings....	\$95 25
McMaster, Della, making duplicate copies of institute lectures.....	15 00
On acct. of preparing report for printer, job printing, postage, ex- press, etc	545 08
Total	<u>\$5,375 88</u>

RECAPITULATION.

1. Amount collected by the State Board of Agriculture from the two mills per capita tax, from the eighty-seven (87) counties in which institutes were held.....	\$5,375 88
2. Amount allowable to one hundred and fifty-seven (157) institute societies from the three mills per capita tax, from the eighty-seven (87) counties in which institutes were held	7,977 90
3. Amount expended by the State Board of Agriculture in aid of one hundred and fifty seven (157) institutes for lecturers	4,720 55
4. Amount expended by county societies for expenses of one hundred and fifty-seven (157) institutes.....	5,670 25
5. Total expenses for one hundred and fifty-seven (157) institutes.....	10,390 80
6. Average expenditure per institute by the State Board of Agriculture for lecturers.....	30 06
7. Average expenditure per institute by societies.....	36 11
8. Total average expense per institute.....	66 17
9. Total number of persons in attendance at one hundred and fifty-seven (157) institutes.....	62,912
10. Average number of persons in attendance.....	398.1
11. Number of independent institutes reported.....	31
12. Expenses of thirty-one (31) independent institutes.....	1,048 21
13. Average expense of independent institutes.....	33 81
14. Number of persons attending the thirty-one (31) independent institutes reported.....	10,668
15. Average attendance at the thirty-one (31) independent institutes reported.....	<u>344.1</u>

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DEC. 2, 1895, AND ENDING FEB. 29, 1896.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expense Reported By Society.	Per Capita Allowance to Institute Under the In-
		Where.	When.			
Adams.....	26,093	North Liberty	January 6-7	400	\$24 54	\$78 28
Allen.....	40,644	Beaver Dam	January 8-4	300	38 77	120 00
Ashland.....	22,228	Bluffton	January 29-30	500	28 00	66 67
Ashland.....	22,228	Loudonville	December 6-7	300	26 80	120 00
Ashland.....	22,228	Polk	December 27-28	500	27 50	120 00
Ashland.....	22,228	Polk	December 27-28	200	28 46	120 00
Ashland.....	22,228	Polk	January 13-14	400	37 26	106 58
Ashland.....	22,228	Polk	December 11-12	300	18 00	84 30
Ashland.....	22,228	Polk	February 3-4	400	34 06	84 30
Ashland.....	22,228	Polk	January 1-2	225	25 10	120 00
Ashland.....	22,228	Polk	February 7-8	500	57 75	120 00
Ashland.....	22,228	Polk	January 22-23	450	31 75	89 69
Ashland.....	22,228	Polk	January 24-25	400	34 60	89 69
Ashland.....	22,228	Polk	January 8-9	380	24 00	120 00
Ashland.....	22,228	Polk	January 10-11	150	43 82	120 00
Ashland.....	22,228	Polk	February 19-20	250	49 60	52 70
Ashland.....	22,228	Polk	February 26-27	700	47 25	80 94
Ashland.....	22,228	Polk	January 15-16	225	31 50	80 94
Ashland.....	22,228	Polk	January 3-4	500	31 20	120 00
Ashland.....	22,228	Polk	January 29-30	450	22 00	120 00
Ashland.....	22,228	Polk	December 20-21	350	22 96	100 66
Ashland.....	22,228	Polk	January 1-2	115	7 25	72 72
Ashland.....	22,228	Polk	February 10-11	409	26 84	120 00
Ashland.....	22,228	Polk	February 26-27	525	26 75	120 00
Ashland.....	22,228	Polk	February 12-13	350	23 60	120 00
Ashland.....	22,228	Polk	February 17-18	700	45 25	80 11
Ashland.....	22,228	Polk	December 18-19	300	21 00	95 78
Ashland.....	22,228	Polk	January 13-14	700	60 00	95 78
Ashland.....	22,228	Polk	December 25-26	300	25 48	95 78
Ashland.....	22,228	Polk	February 3-4	305	47 89	95 78
Ashland.....	22,228	Polk	January 6-7	600	87 85	95 78
Ashland.....	22,228	Polk	January 24-25	600	87 85	95 78

FARMERS' INSTITUTES, ETC. CONTINUED.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expense Reported By Local Society.	Per Capita Allowance to Local Society Under the In- stitute Law.
		Where.	When.			
Cuyahoga.....	300,970	Dover.....	January 8-9.....	300	\$ 30 00	\$ 120 00
Darke.....	42,961	Chagrin Falls.....	January 22-23.....	650	61 35	120 00
Defiance.....	25,769	Versailles.....	January 6-7.....	500	32 70	120 00
Delaware.....	27,180	Greenville.....	January 3-4.....	400	32 45	77 30
Eric.....	35,462	Defiance.....	December 11-12.....	220	12 50	81 56
Fairfield.....	33,939	Hicksville.....	January 3-4.....	600	38 84	106 39
Payette.....	22,309	Delaware.....	December 6-7.....	350	10 90	66 04
Franklin.....	124,087	Sunbury.....	January 8-9.....	400	53 19	101 81
Fulton.....	22,023	Berlin Heights.....	January 17-18.....	300	38 44	81 95
Gallia.....	27,005	Sandusky.....	January 2-3.....	500	28 25	66 92
Geauga.....	13,489	Greencastle.....	December 2-3.....	200	37 49	66 07
Greene.....	29,820	Bloomington.....	February 14-15.....	400	24 43	81 01
Guernsey.....	28,645	Westerville.....	December 4-5.....	350	12 75	40 46
Hamilton.....	374,773	Georgesville.....	February 12-13.....	600	26 75	85 83
Hancock.....	42,563	Wauseon.....	December 9-10.....	375	32 20	120 00
Hardin.....	28,939	Delta.....	January 20-21.....	800	12 15	120 00
Harrison.....	20,880	Centenary Church.....	December 4-5.....	400	45 00	85 85
Henry.....	25,080	Burton.....	January 17-18.....	700	70 80	120 00
		Cedarville.....	December 30-31.....	200	47 50	120 00
		Xenia.....	February 7-8.....	600	38 75	86 81
		Cambridge.....	January 27-28.....	800	89 15	62 49
		Harrison.....	February 24-25.....	500	200 00	75 24
		Glendale.....	February 28-29.....	500	28 87	45 90
		Mt. Blanchard.....	December 16-17.....	400	38 75	
		Benton Ridge.....	January 31, February 1.....	800	89 15	
		Ada.....	February 1-4.....	500	80 00	
		Freeport.....	January 31, February 1.....	500	200 00	
		Cadiz.....	January 29-31.....	500	28 87	
		Florida.....	January 1-2.....	281	28 87	
		Napoleon.....	January 24-25.....	231	45 90	

FARMERS' INSTITUTES, ETC.—CONTINUED.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expense Reported By Local Society	Per Capita Allowance to Local Society Under the In- stitute Law.
		Where.	When.			
Highland	29,048	Hillsboro	February 19-20	250	\$5.90	\$87.14
Hocking	22,658	Rainsboro	February 28-29	500	11.80	67.97
Holmes	21,139	Logan	January 31, February 1	200	21.00	63.41
Huron	81,949	Killbuck	December 27-28	275	16.25	95.84
Jefferson	39,415	Millersburg	February 5-6	200	23.15	95.84
Knox	27,600	Greenwich	December 23-24	300	35.73	118.24
Lake	18,285	Townsend Center	January 27-28	650	33.07	82.80
Lawrence	39,556	Richmond	January 17-18	800	58.10	64.70
Licking	43,279	Smithfield	January 24-25	350	29.00	118.67
Logan	27,386	Centerburg	December 11-12	400	12.40	120.00
Lorain	40,286	Danville	February 7-8	350	15.00	82.16
Lucas	102,286	Painesville	January 15-16	800	45.42	120.00
Madison	20,057	Labelle	December 2-3	125	21.60	120.00
Mahoning	55,979	Gauville	January 10-11	500	14.07	120.00
Marion	24,727	Utica	December 16-17	600	38.40	120.00
Medina	21,742	North Mansfield	January 27-28	290	48.10	120.00
Meigs	29,813	Bellefontaine	December 2-3	225	24.07	120.00
Mercer	27,220	North Amherst	January 10-11	300	36.35	60.17
		Richfield	December 6-7	500	22.98	120.00
		Maumee	January 6-7	100	19.94	74.18
		London	February 10-11	225	50.65	55.23
		North Jackson	December 20-21	300	20.00	89.44
		Canfield	December 30-31	500	13.50	81.66
		Caledonia	December 2-3	100	26.26	16.10
		Marion	December 11-12	425	22.75	
		Brunswick	January 6-7	300	25.90	
		Whittlesey	January 29-30	350	26.26	
		Chester	December 9-10	500	22.75	
		Dyesville	December 6-7	250	16.10	
		Fort Recovery	January 8-9	400		
		Meudon	January 10-11			

FARMERS' INSTITUTES, ETC.—CONTINUED.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expense Reported By Local Society.	Per Capita Allowance to Institute Under the In-
		Where.	When.			
Miami.....	39,754	Piqua.....	January 31, February 1.....	600	\$57 00	\$ 119 26
Monroe.....	25,175	Troy.....	February 7-8.....	500	41 00	.....
Montgomery.....	100,852	Woodfield.....	January 29-30.....	60	25 00	75 52
Morgan.....	19,143	Wadala.....	February 6-6.....	300	28 17	120 00
Morrow.....	18,120	Miamisburg.....	February 17-18.....	540	27 00	.....
Muskingum.....	31,210	Chester Hill.....	December 16-17.....	700	27 00	57 13
		Cardington.....	December 9-10.....	450	49 85	54 88
		Frazzysburg.....	December 13-14.....	300	54 10	120 00
		Chandlersville.....	December 23-24.....	350	54 02	.....
Noble.....	20,753	Caldwell.....	January 20-21.....	350	17 50	62 26
Ottawa.....	21,974	Summerfield.....	February 7-8.....	325	20 00	.....
Faulding.....	23,562	Fort Clinton.....	January 15-16.....	300	41 25	56 52
Perry.....	31,151	Oakwood.....	January 10-11.....	400	23 57	77 80
		Antwerp.....	January 13-14.....	200	30 00	.....
		Rehoboth.....	December 18-19.....	700	33 66	98 45
Pickaway.....	26,969	Thorville.....	December 20-21.....	600	43 25	.....
		Ashville.....	January 13-14.....	500	41 00	80 87
Pike.....	17,482	Williamsport.....	January 27-28.....	400	40 00	.....
Portage.....	27,868	Piketon.....	January 3-4.....	82	15 85	52 45
Preble.....	23,421	Edinburg.....	January 1-2.....	350	14 19	83 60
Putnam.....	30,198	Garrettsville.....	January 20-21.....	300	40 90	.....
		Lewisburg.....	February 5-6.....	400	24 45	70 26
		Camden.....	February 21-22.....	450	28 50	.....
		Columbus Grove.....	December 13-14.....	150	40 00	90 66
Richland.....	38,072	Leipsic.....	January 8-9.....	600	45 00	.....
Ross.....	39,454	Shelby.....	December 4-5.....	300	53 25	114 22
		Lucas.....	December 25-26.....	160	28 25	.....
		Kingston.....	January 15-16.....	275	61 81	118 86
		Frankfort.....	February 21-22.....	400	45 56	.....
Sandukey.....	30,617	Fremont.....	January 13-14.....	600	50 00	91 86
		Clyde.....	January 20-21.....	600	45 50	.....

FARMERS' INSTITUTES, ETC.—CONCLUDED.

Counties.	Institutes Held.		Attendance Reported.	Local Expense Reported By Society.	Per Capita Allowance to Local Society Under the In- stitute Law.
	Population.	Where.	When.		
Scioto.....	35,377	Haverhill.....	December 30-31.....	200	\$ 106 13
Seneca.....	40,969	Harrisonville.....	January 1-2.....	175	23 45
Shelby.....	24,707	Republic.....	December 20-21.....	200	46 94
Stark.....	84,170	Tiffin.....	January 22-23.....	375	62 05
Summit.....	54,069	Sidney.....	December 18-19.....	400	43 65
Trumbull.....	42,373	Jackson Center.....	December 30-31.....	400	28 70
Tuscarawas.....	46,618	Navarre.....	December 11-12.....	125	14 60
Union.....	22,860	Alliance.....	December 16-17.....	400	56 75
Van Wert.....	29,671	North Springfield.....	January 8-4.....	800	31 00
Vinton.....	16,045	Osborn Corners.....	January 24-25.....	350	44 00
Warren.....	25,468	Vienna.....	December 23-24.....	400	34 42
Washington.....	42,380	North Bloomfield.....	December 25-26.....	175	10 59
Wayne.....	39,005	Gnadenhuetten.....	January 29-30.....	400	52 85
Williams.....	24,897	New Philadelphia.....	March 11-12.....	300	72 20
Wood.....	44,392	Marysville.....	December 9-10.....	200	35 00
Wyandot.....	21,722	Richwood.....	February 3-4.....	1,000	88 58
Totals.....		Van Wert.....	January 27-28.....	400	23 96
		Ohio City.....	February 5-6.....	500	17 00
		New Plymouth.....	January 17-18.....	138	8 50
		Waynesville.....	February 14-15.....	375	46 13
		Lebanon.....	February 24-25.....	400	38 20
		Lower Salem.....	December 13-14.....	350	39 00
		Watertown.....	February 5-6.....	400	44 84
		Wooster.....	December 9-10.....	400	38 03
		Shreve.....	January 31, February 1.....	600	42 00
		Bryan.....	January 17-18.....	500	58 00
		Montpelier.....	January 15-16.....	200	10 25
		Bowling Green.....	December 30-31.....	350	18 00
		Grand Rapids.....	January 22-23.....	400	39 60
		Nevada.....	December 13-14.....	283	37 50
		Upper Sandusky.....	December 18-19.....	500	26 25
				110	27 85
				62,912	\$ 5,670 25
					\$ 7,977 90

FARMERS' INSTITUTES, ETC.—CONTINUED.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expense Reported By Local Society.	Per Capita Allowance to Local Society Under the In- stitute Law.
		Where.	When.			
Miami.....	39,754	Piqua.....	January 31, February 1.....	600	\$57 00	\$119 26
Monroe.....	25,175	Troy.....	February 7-8.....	500	41 00	75 62
Montgomery.....	100,852	Woodsfield.....	January 22-23.....	60	25 00	120 00
Morgan.....	19,143	Vandalia.....	February 9-6.....	300	38 17	.....
Morrow.....	18,120	Miamisburg.....	February 17-18.....	540	59 00	.....
Muskingum.....	51,210	Chester Hill.....	December 16-17.....	700	27 00	57 43
		Cardington.....	December 9-10.....	450	42 35	54 86
		Frazesburg.....	December 13-14.....	300	54 10	120 00
		Chandlersville.....	December 23-24.....	450	55 02	.....
		Caldwell.....	January 20-21.....	350	17 50	62 26
Noble.....	20,753	Summerfield.....	February 7-8.....	325	20 00	.....
Ottawa.....	21,974	Port Clinton.....	January 15-16.....	500	41 25	65 92
Paulding.....	25,932	Oakwood.....	January 10-11.....	400	25 57	77 80
Perry.....	31,151	Antwerp.....	January 13-14.....	280	30 00	.....
		Rchoboth.....	December 18-19.....	700	33 66	98 45
		Thornville.....	December 20-21.....	600	43 25	.....
		Ashville.....	January 13-14.....	500	41 00	80 87
Pickaway.....	26,959	Williamsport.....	January 27-28.....	400	40 00	.....
Pike.....	17,482	Pikeeton.....	January 3-4.....	82	15 85	52 45
Portage.....	27,868	Edinburg.....	January 1-2.....	350	14 19	83 60
Preble.....	23,421	Garrettsville.....	January 20-21.....	300	40 90	.....
		Lewisburg.....	February 5-6.....	400	24 45	70 26
		Camden.....	February 21-22.....	450	28 50	.....
Putnam.....	30,196	Columbus Grove.....	December 13-14.....	150	40 00	90 56
		Leipsic.....	January 8-9.....	600	45 00	.....
Richland.....	38,072	Shelby.....	December 4-5.....	300	53 25	114 22
Ross.....	39,454	Lucas.....	December 25-26.....	160	28 25	.....
		Kingston.....	January 15-16.....	275	51 81	118 36
		Frankfort.....	February 21-22.....	400	45 56	.....
		Fremont.....	January 13-14.....	600	50 00	91 36
Sandusky.....	30,617	Clyde.....	January 20-21.....	600	45 50	.....

FARMERS' INSTITUTES, ETC.—CONCLUDED.

Counties.	Institutes Held.		Attendance Reported.	Local Expense Reported By Society.	Per Capita Allowance to Local Society Under the In-stitute Law.
	Where.	When.			
Scioto.....	Haverhill.....	December 30-31.....	200	\$ 20 75	\$ 108 13
Seneca.....	Harrisonville.....	January 1-2.....	175	23 45	23 00
Shelby.....	Republic.....	December 20-21.....	200	46 94	120 00
Stark.....	Tiffin.....	January 22-23.....	375	62 06	74 12
Summit.....	Sidney.....	December 18-19.....	400	43 65	120 00
Trumbull.....	Jackson Center.....	December 30-31.....	400	28 70	120 00
Tuscarawas.....	Navarre.....	December 11-12.....	125	14 60	120 00
Union.....	Alliance.....	December 16-17.....	400	56 75	120 00
Van Wert.....	North Springfield.....	January 8-4.....	300	31 06	120 00
Vinton.....	Osborn Corners.....	January 24-25.....	350	44 00	120 00
Warren.....	Vienna.....	December 23-24.....	300	34 42	120 00
Washington.....	North Bloomfield.....	December 25-26.....	175	10 59	120 00
Wayne.....	Gnadenhuetten.....	January 29-30.....	400	52 85	120 00
Williams.....	New Philadelphia.....	March 11-12.....	200	72 20	120 00
Wood.....	Marysville.....	December 9-10.....	300	35 00	68 58
Wyandot.....	Richwood.....	February 3-4.....	1,000	84 29	88 01
Totals.....	Van Wert.....	January 27-28.....	400	23 86	58 01
	Ohio City.....	February 6-6.....	500	17 00	48 13
	New Plymouth.....	January 17-18.....	136	8 50	76 40
	Waynesville.....	February 14-15.....	375	38 20	120 00
	Lebanon.....	February 24-25.....	400	89 00	120 00
	Lower Salem.....	December 13-14.....	350	44 84	117 01
	Watertown.....	February 6-6.....	600	38 03	74 69
	Wooster.....	December 9-10.....	600	42 00	120 00
	Shreve.....	January 31, February 1.....	500	58 00	107 25
	Bryan.....	January 17-18.....	200	10 25	120 00
	Montpelier.....	January 15-16.....	350	18 00	39 60
	Bowling Green.....	December 30-31.....	400	37 50	65 17
	Grand Rapids.....	January 22-23.....	293	26 25	27 85
	Nevada.....	December 13-14.....	500	26 25	62,912
	Upper Sandusky.....	December 18-19.....	110	27 85	\$ 5,670 25
					\$ 7,977 90

INDEPENDENT INSTITUTES.

Counties.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Society.
	Where.	When.		
Ashland	Savannah	January 24, 25.....	500	\$ 58 40
Ashtabula	Jefferson.....	February 3, 4.....	200	35 00
Butler.....	Monroe.....	January 31, February 1.....	300	30 00
Champaign	Mechanicsburg	January 7, 8.....	600	43 00
Clark	North Hampton	February 11, 12.....	375	39 25
Clermont	Williamsburg	January 31, February 1.....	350	26 85
	Mulberry	February 21, 22.....	380	51 87
Cuyahoga	Euclid	January 29, 30.....	300	62 00
Franklin	Groveport.....	December 17, 18	400	55 47
Hamilton	Blue Ash.....	February 22.....	103	2 16
Huron	Monroeville	February 12, 13.....	300	34 50
Jefferson.....	Mt. Pleasant.....	February 25, 26.....	600	78 62
Knox.....	Fredericktown	January 17, 18.....	400	25 00
Lake.....	Willoughby.....	December 4, 5.....	400	22 50
Licking.....	Brownsville.....	January 24, 25.....	250	12 80
Lorain	Columbia Center	January 30, 31.....	300	35 00
Mahoning	North Lima.....	January 31, February 1.....	250	55
Medina	Chatham	November 26.....	200	16 00
	Seville	December 28.....	300	53 00
	Mallet Creek	January 9, 10.....	550	28 00
Mercer	Rockford	January 21, 22.....	300	35 00
	Neptune	January 31, February 1	300	30 55
Miami	West Charleston....	December 27, 28.....	400	12 75
Muskingum	White Cottage.....	January 1, 2.....	400	40 00
	Norwich	January 2, 3	400	25 00
Paulding.....	Payne.....	February 7, 8.....	400	23 62
Pickaway	Tarleton	February 19, 20....	200	30 00
Richland.....	Bellville	February 25, 26.....	300	21 10
Scioto.....	Mt. Joy.....	February 4, 5.....	160	24 20
Seneca and Sandusky	Green Spring.....	February 12, 13.....	500	73 00
Stark	Marlboro	February 14, 15.....	250	23 02
Totals.....			10,668	\$1,048 21

NAMES AND TOPICS

OF

LECTURERS

For Institute Season of 1895-96.

FROM AGRICULTURAL DEPARTMENT, OHIO STATE UNIVERSITY, COLUMBUS, O.

PROF. WILLIAM R. LAZENBY,

HORTICULTURE AND FORESTRY.

1. How Plants Grow and Feed. Thirty minutes.
2. Some Profitable Garden Crops. Thirty minutes.
3. How to Plant and Treat an Apple Orchard. Thirty minutes.
4. The Relation of Science to Agriculture. Thirty minutes.
5. Weeds, Insects and Fungi. Thirty minutes.
6. Horticulture as a Vocation. Thirty minutes.
7. How to Educate Yourself. Thirty minutes.
8. Some Bad Effects from the Destruction of Our Forests. Thirty minutes.

PROF. W. A. KELLERMAN,

BOTANY.

1. Water in Relation to Plant Growth. Thirty minutes.
2. Scientific Training. Fifty minutes.
3. Prevention of Smuts in Cereals. Thirty minutes.
4. Work of the Bacteria. Fifty minutes.
5. Vegetable Physiology. Forty minutes.
6. Vegetable Parasites of the Orchard. Thirty to forty minutes.
7. Air and Soil in Relation to Health. Forty minutes.

PROF. THOMAS F. HUNT,

AGRICULTURE.

1. The Farmers' Need of Education. (n.) Forty minutes.
2. Ohio Agriculture. (n.) Forty minutes.
3. Corn Culture. Forty minutes.
4. The Feeding Value of Stock Foods. Fifty minutes.
5. The Economy of Ensilage. Twenty minutes.
6. Effect of Fertilizers Upon the Physical Properties of Soils. Thirty minutes.

7. Wool: Its Structure and Uses. Twenty minutes.
8. A Problem in Intensive Agriculture. Fifteen minutes.
9. The Manufacture and Sale of Butter. Thirty minutes.
10. A Good Dairy Cow. Twenty minutes.
11. What is a Good Horse? Thirty minutes.
12. The School of Agriculture of the Ohio State University. Fifteen minutes.

PROF. W. DAVID GIBBS,

AGRICULTURE.

1. Origin and Composition of Soils. Thirty minutes.
2. The Relation of Soils to Water. Thirty minutes.
3. Purposes of Tillage. Thirty minutes.
4. Some Reasons for Crop Rotation. Twenty minutes.
5. Wheat Culture. Fifteen minutes.
6. Principles of Feeding. Twenty-five minutes.
7. Principles of Stock Breeding. Twenty-five minutes.
8. The Objects of an Agricultural Education. Twenty minutes.
9. The History and Work of Agricultural Experiment Stations. Fifteen minutes.

CHARLES W. BURKETT,

FOREMAN OF FARM.

1. Chemical and Physical Lessons of the Soil. Twenty minutes.
2. What we Should Look at in Feeding Our Farm Animals. Twenty-five minutes.
3. Agriculture and Our Nation. Fifteen minutes.
4. Tillage and Cultivation. Twenty minutes.
5. Agricultural Education. Fifteen minutes.
6. Country Life the Ideal Life. (n.) Twenty-five minutes.

FROM AGRICULTURAL EXPERIMENT STATION, WOOSTER, O.

C. E. THORNE,

DIRECTOR.

1. Seven Years' Experiments with Fertilizers. Thirty minutes.
2. Hints to Purchasers of Commercial Fertilizers. Thirty minutes.
3. How to Obtain "Ammonia" Without Cost. Thirty minutes.
4. Can We Afford to Make Barnyard Manure? Thirty minutes.
5. Some Points in Cattle Feeding. Thirty minutes.
6. Some Wastes on the Farm. Thirty minutes.
7. Grain Smuts: Their Cost and Prevention. Thirty minutes.
8. The Spraying of Orchards. Thirty minutes.
9. What Shall We Eat? (n.) Forty-five minutes.
10. The Farm and the School. (n.) Forty-five minutes.

W. J. GREEN,

HORTICULTURIST.

1. Irrigation for the Garden. Twenty minutes.
2. Northern Grown Seeds. Twenty minutes.
3. Pedigree in Plants. Twenty minutes.
4. Fertilizers for Potatoes. Twenty minutes.
5. Spraying Fruit Trees. Thirty minutes.
6. Orchard Planting and Cultivation. Thirty minutes.
7. Some Obstacles to Success in Horticulture. Twenty minutes.
8. Horticulture at the Experiment Station. Thirty minutes.

J. FREMONT HICKMAN,

AGRICULTURIST.

1. A few Hints in Growing a Crop of Oats. Twenty minutes.
2. Stabling and Management of Dairy Cows. Thirty minutes.
3. Commercial Fertilizers. Twenty-five minutes.
4. A Few Mistakes We Farmers Make. (n.) Forty minutes.
5. Preserving and Applying Liquid Manures. Thirty minutes.
6. Alfalfa, Crimson Clover, Rape and Other Forage Plants. Twenty minutes.
7. Modern Methods in Corn Culture. Twenty-five minutes.
8. Some Facts in Feeding for Beef. Twenty minutes.
9. Timely Thoughts for Girls and Boys of the Farm. Twenty minutes.
10. The Relative Values of Food for Stock. Twenty minutes.
11. Shrinkage in Grain, Straw and Hay. Fifteen minutes.
12. Dehorning, Feeding and Rearing Calves. Twenty minutes.
13. Does the Farmer Need an Education? Twenty-five minutes.
14. The Tenant Farmer. Twenty minutes.

AUGUSTINE D. SELBY,

BOTANIST AND CHEMIST.

1. Weeds: What are Worst Weeds and Why? Twenty-five minutes.
2. Plant Diseases: How Caused and How Prevented. Twenty-five minutes.
3. What is a Fungicide? Fifteen minutes.
4. Black Knot and Apple Scab. Twenty minutes.
5. Diseases of the Peach. Forty minutes.
Specifically:—
 - a. Peach Yellows and Peach Crown Gall. Twenty minutes.
 - b. Peach Curl, Mildew and Leaf Spots. Fifteen minutes.
 - c. Peach Fruit Spots, Peach Rot and Prevention. Twenty minutes.
6. The Smuts of Grain and Their Prevention. Twenty-five minutes.
7. The Why of Methods of Fruit Canning and Food Preservation. Thirty to forty minutes.
8. The Fecundation of Flowers as a Problem for Farmers and Fruit Growers. Twenty-five to forty minutes.
9. Plant Growth in Relation to Chemical and Physical Factors. Thirty minutes.
10. Hints to Purchasers of Commercial Fertilizers. Thirty minutes.
11. Science Training in Farm Life. Thirty minutes.

F. M. WEBSTER,

ENTOMOLOGIST.

1. The Hessian Fly and Methods of Prevention. Twenty minutes.
2. The Western Corn Root-Worm in Ohio. Twenty-five minutes.
3. Some of the Older Pests of the Corn Field. Twenty minutes.
4. Some Insect Enemies of Clover. Twenty minutes.
5. How to Deal With Insect Pests of the Orchard. Twenty minutes.
6. Some Little Known Wheat Insects. Twenty minutes.
7. The Farmer Boy: What Shall His Future Be? Fifty minutes.
8. The Chinch Bug. Twenty minutes.

LECTURERS EMPLOYED
BY THE
OHIO STATE BOARD OF AGRICULTURE,
WITH
POSTOFFICE ADDRESSES AND TOPICS.

ALVA AGEE, Cheshire, O.

1. Problems in Tillage. Twenty-five minutes.
2. Increasing the Productiveness of the Soil. Twenty minutes.
3. Potato Culture. Twenty minutes.
4. The Commercial Side of Farming. Twenty minutes.
5. Home Study. Twenty-five minutes.
6. What Manner of Man Should a Farmer Be? (n.) Thirty minutes.
7. The Farmer's Boy. (n.) Twenty-five minutes.

J. H. BRIGHAM, Delta, O.

1. The Farmer's Share. Thirty to forty-five minutes.
2. How I Restore and Maintain the Fertility of My Land. Twenty to twenty-five minutes.
3. Why Prices of Farm Products are High or Low. Twenty minutes.
4. What to do With Cheap Wheat. Fifteen minutes.
5. Suggestions to Boys Who are Ambitious. (n.) Thirty to forty minutes.
6. Give the Boys and Girls a Chance. Twenty minutes.
7. What the Grange has Done, and What it Purposes Doing. Forty minutes.
8. Why Farmers Should Organize. Forty minutes.
9. What the A. & M. Colleges and Experiment Stations Should do for Farmers. Thirty to forty minutes.
10. Strikes. Fifteen minutes.
11. Taxation. Twenty-five minutes.
12. Cure for Hard Times. Fifteen minutes.
13. Is Self Government too Expensive? Twenty minutes.
14. How I Raised a Good Crop of Corn in a Very Wet Season and Another in a Very Dry Season, When Some of My Neighbors Failed to do so. Twenty minutes.
15. How the Secretary of Agriculture Can Help the Farmers. Thirty minutes.
16. The New Farmer. Thirty minutes.

JOHN BEGG, Columbus Grove, O.

1. Past and Present Methods in Corn Culture. Twenty minutes.
2. The Bright Side of Farm Life. Thirty minutes.
3. Cattle Feeding for Profit Under Present Conditions. Twenty minutes.

4. Literature for Young People on the Farm. Thirty minutes.
5. Can We Tile Too Much? Twenty minutes.
6. Raising Hogs for Market and How Best Accomplished. Twenty-five minutes.
7. The Farmer and the Public Schools. Thirty-five minutes.
8. Mixed Farming Versus Specialties. Fifteen minutes.
9. Shall We Quit Raising Horses? Twenty minutes.
10. The Farmer of the Future. Forty-five minutes.

WALDO F. BROWN, Oxford, O.

1. Fencing Our Farms.
2. A Talk About Weeds.
3. Sweet Potatoes: How to Grow and Keep Them. Twenty-five minutes.
4. What a Farm is Worth.
5. Poultry: How to Manage for Profit. Twenty minutes.
6. Need Our Land Become Exhausted?
7. Helps in Drought.
8. Small Fruits for the Family.
9. The Farmer as a Business Man. Twenty minutes.
10. Wanted: A Man. Fifty minutes.

W. I. CHAMBERLAIN, Hudson, O.

1. My Experiments in 1895. Twenty-five minutes.
2. The Orchard: Its Planting and Care. Twenty-five minutes.
3. Effects of Tile Drainage. Twenty-five minutes.
4. Wheat and Potatoes on Clay Soil. Twenty-five minutes.
5. The knowledge of Our Ohio Soils. Twenty-five minutes.
6. A Garden that Pays in Net Cash. Twenty-five minutes.
7. What Live Stock Pays in Ohio. Twenty-five minutes.
8. Child and Parent on the Farm. (n.) Sixty minutes.
Also any lecture of previous years.

F. A. DERTHICK, Mantua, O.

1. Culture of the "King" Corn. Twenty minutes.
2. Four Years With Potatoes. Twenty minutes.
3. Ohio Against the World. Twenty minutes.
4. Dairy Farming. Thirty minutes.
5. The Grange versus Farmers' Clubs. Thirty minutes.
6. Mixed or Special Farming, Which? Thirty minutes.
7. Experience with Spraying Apples, 1895. Twenty minutes.
8. Why I am a Farmer. (n.) Twenty minutes.
9. What is Culture? (n.)
10. Loss and Damage from Adulteration of Food. (n.)

S. H. ELLIS, Springboro, O.

1. The Outlook for the Boy on the Farm.
2. Has the Grange Filled its Mission?
3. The Agricultural Experiment Station.
4. Has it Paid the Farmers of Ohio to Maintain the Farmers' Institutes?
5. Wash Day in the Farm Home.

E. C. ELLIS, Crestvue, O.

1. The Farmer's Home. Twenty minutes.
2. Clover is King. Twenty minutes.
3. Does Farming Pay? If Not, Why Not? Twenty minutes.
4. That Boy: What Will You Make of Him? (n.) Thirty minutes.
5. Gather up the Fragments. Twenty minutes.
6. Pure Blod to the Front: The Scrub Must Go. Fifteen minutes.
7. Strawberries: Their Possibilities. Fifteen minutes.
8. Fertility of Soil a Necessity—How Maintained. Twenty to thirty minutes.
9. Every Man a Debtor to His Profession or Business.
10. Keep a Record of Field Rotation of Crops.
11. How to Increase the Profits of the Farm.

E. E. ELLIOTT, Morning Sun, O.

1. Grasses and Plants for Forage. Thirty minutes.
2. Weeds and Their Uses. Twenty minutes.
3. Master or Slave. (n.) Thirty minutes.
4. The Abuses of Agricultural Fairs. Twenty minutes.
5. Our Friends in Feathers. Twenty minutes.
6. Some of My Mistakes in Hog Raising. Twenty minutes.
7. The Output of Agricultural Information and its Practical Application. (n.)
Thirty minutes.

W. W. FARNSWORTH, Waterville, O.

1. Horticultural Conveniences and Appliances. Twenty minutes.
2. Strawberry Culture. Twenty minutes.
3. Raspberry Culture. Twenty minutes.
4. Currant and Gooseberry Culture. Twenty minutes.
5. Plum and Pear Culture. Twenty minutes.
6. Orchard Management. Twenty minutes.
7. Pruning. Twenty minutes.

H. M. FOREMAN, Waterford, O.

1. Relation of the Inorganic Elements of the Soil to Agriculture. Forty-five minutes.
2. Relation of the Organic Elements of the Soil to Agriculture. Forty minutes.
3. Making and saving Farmyard Manures. Thirty minutes.
4. The Successful Farmer. Thirty minutes.
5. Education of Our Boys and Girls. Thirty minutes.

J. F. GREENE, Sandusky, O.

1. Recent School Legislation—What More is Needed? Twenty minutes.
2. Education of Farmers' Girls and Boys. Twenty to thirty minutes.
3. The Citizen Farmer. (n.) Thirty minutes.
4. A Farmer's Library: Of What it Should Consist and How Obtained. Thirty minutes.

5. Small Fruit for the Home. Fifteen to thirty minutes.
6. Small Fruit for Market. Fifteen to thirty minutes.
7. How to Increase the Profits of the Farm. Fifteen to thirty minutes.
8. Preparation of Soil for a Crop. Fifteen minutes.
9. Value of the Grange to the Farmer. Fifteen to thirty minutes.
10. Noxious Weeds in Fields and Other Places. Fifteen to twenty minutes.
11. Why I am a Farmer and a Patron. (n.) Thirty minutes.
12. Spraying: How Done—Does it Pay? Fifteen minutes.

S. H. HURST, Chillicothe, O.

1. Apples. Forty minutes.
2. Nutmegs. Thirty minutes.
3. Plant Food. Thirty minutes.
4. Cultivation. Thirty minutes.
5. House Conveniences. Thirty minutes.
6. Sterling Manhood. (n.)
7. The Twentieth Century. (n.)

G. E. LAWRENCE, Marion, O.

1. Clover. Fifteen to twenty minutes.
2. "King" Corn. Twenty minutes.
3. The Strawberry. Fifteen to twenty minutes.
4. The Raspberry. Fifteen to twenty minutes.
5. The Signs of the Times. Thirty minutes.
6. The Farmer as a Citizen. Thirty to fifty minutes.

T. C. LAYLIN, Norwalk, O.

1. Wool and Mutton. Twenty minutes.
2. Breeding and Management of Mutton Lambs. Twenty minutes.
3. Fields and Fences. Fifteen to twenty minutes.
4. Business Methods. Twenty minutes.
5. Genius in Farming. Twenty minutes.

W. H. LIKINS, Caledonia, O.

1. Organized Labor versus Organized Greed. Thirty minutes.
2. Spoils. Thirty minutes.
3. Health, Happiness and Profit on the Farm. Thirty minutes.
4. Three Pictures; Past, Present and Future of Our Boys and Girls. Thirty minutes.
5. Rum: Its Effects Financially and Morally. (Non-partisan.) Thirty minutes.

THEO. F. LONGENECKER, Dayton, O.

1. Benefits of Agricultural Fairs.
2. Plant Growth and Plant Food. Twenty minutes.
3. The Strawberry. Fifteen minutes.
4. The Grape and How to Care for it. (Illustrated.) Fifteen minutes.

5. A Study in Tree Fruits. (Illustrated.) Twenty minutes.
6. Budding, Grafting, Reproduction from Buds and Cuttings. (Demonstrated.) Fifteen minutes.
7. Origination and Dissemination of New Varieties. Fifteen minutes.
8. Fungous Diseases and How to Prevent Them. Fifteen minutes.
9. Insect Enemies of Orchard and Garden, and How to Prevent their Ravages. Fifteen minutes.
10. The Golden Rule Applied to the Social Problem. (n.) Thirty-five minutes.
11. Habit. (n.) Thirty-five minutes.

A. T. MCKELVEY, St. Clairsville, O.

1. How to Maintain Fertility.
2. Hints on Strawberry Culture.
3. Suggestions in the Care and Cultivation of Corn.
4. Education on the Farm. (n.)
5. A Plea for Small Farms. Thirty minutes.
6. The Neglect that Imperils Life on the Farm. Thirty minutes.
7. The Farmer in Hard Times. Thirty minutes.
8. The Cultivation of the Social. (n.) Twenty-five minutes.
9. Rural Recreations. (n.) Thirty minutes.
10. Stick to Your Bush. Twenty-five minutes.
11. Business Habits in Farming. Thirty-five minutes.
12. Profit and Loss in Fruit Growing. Thirty-five minutes.

J. H. PALM, Lexington, O.

1. Do Commercial Fertilizers Give an Adequate Return for their Cost When Applied to Potatoes? Twenty minutes.
2. The Mechanical Farmer and His Repair Shop. Twenty minutes.
3. Some of the Mistakes Potato Growers are Liable to Make. Twenty-five minutes.
4. The Farmer's Garden and Truck Patch. Twenty minutes.
5. Profit and Loss on the Farm. Twenty minutes.
6. What we Gain by Organization. Twenty minutes.
7. Enemies of the Potato Grower: Blight, Insect Pests, etc. Twenty minutes.

GEORGE E. SCOTT, Mt. Pleasant, O.

1. Clover: Rotation and Fertility. Twenty minutes.
2. Potatoes: Field and Garden Culture. (Illustrated.) Twenty minutes.
3. The Cow and the Babcock Test. Twenty minutes.
4. Farm Carpentry. Fifteen minutes.
5. Equipments for Dairying. (Illustrated.) Twenty minutes.
6. Poultry and its Value on the Farm. Fifteen minutes.
7. Attractions for the Farm and Home. (Illustrated—n.) Twenty-five minutes.
8. Live and Let Live. Thirty minutes.

JOHN L. SHAWVER, Bellefontaine, O.

1. The Farm Dairy. Fifteen minutes.
2. Points in Butter Making. Twenty to thirty minutes.
3. The Farmer's Fruit Supply. Fifteen minutes.

4. The Farmer's Dwelling. Fifteen minutes.
5. Barns and Out-buildings. Fifteen minutes.
6. The Business Side of Farm Life. Twenty minutes.
7. Seedtime and Harvest—A Talk to Young People. (n.) Thirty to forty minutes.

S. H. TODD, Wakeman, O.

1. Corn Culture. Fifteen minutes.
2. How Can We Raise Potatoes so as to Realize the Greatest Profit? Twenty minutes.
3. The Result of this Year's Labor on the Farm. Thirty minutes.
4. Commercial Fertilizers: How used to Get the Best Results. Twenty minutes.
5. Value of Early Maturity in our Animals and How Obtained. Thirty minutes.
6. Economy on the Farm. Twenty-five minutes.
7. How Shall We Restore Our Worn-out Lands? Twenty-five minutes.
8. Which of the Two is the More Important Farm Crop, the Stock or the Boys and Girls? (n.) Forty to sixty minutes.
9. How Can We Get the Most Out of the Hog? Twenty-five minutes.
10. What encouragement is there for Farmers to Continue in the Sheep Industry? Twenty-five minutes.
11. The Farmer's Hen: Why Don't She Lay When Eggs are High?

C. G. WILLIAMS, Gustavus, O.

1. Some Chances for Improvement. Twenty minutes.
2. Potato Experiments. Thirty minutes.
3. Chemical Fertilizers: Mixing them at the Farm. Twenty-five minutes.
4. Farm Poultry. Twenty minutes.
5. Winter Evenings and Leisure Hours. (n.) Thirty minutes.
6. What Inducement Does the Farm Hold Out to Young Men? Twenty-five minutes.

J. E. WING, Mechanicsburg, O.

1. Clovers and Other Legumes. Thirty minutes.
2. Seeds and Seed-beds. (Illustrated.) Fifteen minutes.
3. Corn Culture. (Illustrated.) Twenty minutes.
4. Shall We Quit Growing Wheat? Twenty minutes.
5. The Model Barn and How to Use It. (Illustrated.) Thirty minutes.
6. The Ewe and Her Lamb. Thirty minutes.
7. Feeding Lambs for Market. Thirty minutes.
8. What Ails the Wool Market? (No tariff nor politics in this.) Twenty minutes.
9. The Business Pig. Thirty minutes.
10. Ranch Life in the Heart of the Rockies. (n.) Forty minutes.

PAPERS READ
AT
FARMERS' INSTITUTES 1895-1896.

FORWARDED TO THE SECRETARY OF THE DEPARTMENT OF AGRICULTURE FOR
PUBLICATION IN THE ANNUAL INSTITUTE REPORT.

A PROBLEM IN INTENSIVE AGRICULTURE.

BY THOMAS F. HUNT, PROFESSOR OF AGRICULTURE, OHIO STATE UNIVERSITY,
COLUMBUS, OHIO.

The subject of the paper that I am about to present is *a* problem in intensive agriculture and not *the* problem in intensive agriculture. I am not going to present the one problem in intensive agriculture, but one of the problems.

Some years ago, when I was a student in the college of agriculture of one of our state universities, I listened to a lecture by that well-known gardener, J. M. Smith, of Green Bay, Wis. He owned forty-three acres of what had been termed a sand bank along the edge of Lake Michigan. At the time he talked to us, he considered that he only had thirty acres of it in profitable tillage, and from these forty-three acres, only thirty acres of which brought him any profit, he told us that the previous year he had sold \$16,000 worth of garden products. That was intensive agriculture.

Last summer, I was in Colorado and while there visited the Broadmoor dairy ranch of one thousand acres, operated by Dr. Robert Meade Smith. On this ranch, Dr. Smith keeps about two hundred head of cattle and, at the time of my visit, one hundred and three head were in milk. I visited this ranch on the 12th of July. At this time, Dr. Smith was feeding about ten pounds of grain consisting of a mixture of one part bran, one part corn meal, and one part malt sprouts, and in addition, from eight to ten pounds of Alfalfa hay. Perhaps you think Dr. Smith raised a portion of this grain and hay. He did nothing of the kind, however, he bought every bit of it and was paying \$6.00 per ton for alfalfa, \$10.00 per ton for malt sprouts, \$21.00 per ton for bran, and \$23.00 per ton for corn. The hay was purchased on a neighboring irrigated ranch, while the grain and mill feed were shipped in from a distance.

You may inquire as I did, what use this one thousand acre dairy ranch was put to. "Why," replied Dr. Smith, "our milk cows—103 cows—run in two hundred acres about six hours each day, as much for exercise as for anything else, while the rest of the one thousand acres supports the rest of the cattle. It is thus plainly evident that it took the products from several other farms besides this one thousand acres, to support a dairy containing, all told, two hundred cattle. This is extensive farming.

The problem of intensive as compared with extensive farming has occupied the attention of thoughtful people in all times and must continue to do so as long as population continues to increase. It, perhaps, may be reasonably estimated that an acre of good pasture will produce during one season, 150 pounds of dressed beef. The flour from 15 bushels of wheat per acre contains, approximately, six times as much food value as the 150 pounds of meat. An acre of corn will produce, approximately, twice the food value of an acre of wheat, while there is about 4 times as much food value in two hundred bushels of potatoes as in fifteen bushels of wheat.

The ability of a given area of land to support a population and the possible density of population is dependent upon the character of the farming. Provided the land is suitable for potato culture, an acre of potatoes will support 24 times as dense a population as when pastured for beef. The discovery of America, the consequent universal introduction of the potato into European agriculture and the consequent production on American soil of eighty millions acres of corn which produces twice the food value of any hitherto known cereal, has had a most profound effect upon the civilization of the world. It is not merely the man who makes two blades of grass to grow where one grew before that is a benefactor to his race, but the man who, by any means, produces twice the food on a given area that was produced before, is a benefactor to his race. Not only human existence, but all life and nearly all power, and nearly all energy is dependent upon plant growth. The fact that a large part of the energy of the world is now mined from the earth in shape of coal, or pumped from the earth as oil, or conducted through pipes as gas, only emphasizes the importance of plant growth for all of these substances are the results of former vegetable life.

We have been studying this subject of intensive agriculture on the Ohio State University farm by attempting to grow three ordinary farm crops in two years. Allow me to relate, briefly, one or two of these experiments. In 1894, we cut a crop of mixed clover and timothy hay, between the 7th and 12th of June, from ten acres. Between the 12th and 16th of June, the ground was plowed about four inches deep. It was then rolled, harrowed, and again rolled. It was then immediately planted to corn. The corn was planted with an ordinary two-horse planter. After planting the field once, we straddled the rows and planted it again, thus making the rows twenty-two inches apart instead of forty-four. The corn was planted three grains every sixteen inches in a row, thus putting on the ground four times the amount of seed that is usual for a grain crop. This crop was intended for soiling and for ensilage. A few days after planting, the corn was harrowed with an ordinary harrow. After this, the corn was gone over three times at intervals of about a week with the Zephaniah Breed's weeder. Three teeth were removed every twenty-two inches, in order to prevent injury to the corn. This stirred the ground slightly and prevented many weeds getting a start. With one horse, one of our students harrowed with this tool the whole ten acres in five hours. This ended the cultivation and besides a little work with the hoe, to prevent Indian mallow from seeding, no more work was done until harvest time. The total cost of plowing the ground, preparing the seed bed, the planting, and seed and for cultivation was \$38.10. The yield of green corn from these ten acres was 94½ tons. The cost of producing the corn up to the time of harvest was, therefore, about forty cents per ton. Having plowed the clover sod for corn it was not necessary to plow the land again after the corn had been removed. Two harrowings in opposite directions with a spring tooth harrow put the land in fine condition for drilling in wheat. The labor cost of putting in the wheat was \$1.10 per acre. In the spring, the field was seeded to clover. Like the fall of 1895, the fall of 1894 was extremely dry. On account of the removal of the corn for ensilage, the wheat was sown rather late. The combination of these two facts resulted in a rather meager growth of wheat. On the

whole, I feel sure that the wheat was not so good as on similar land not so heavily cropped. In fact the stand of wheat in the spring was so poor that I had about two acres plowed up and put into corn, much to my subsequent regret. Disasters never come singly and this wheat was also somewhat injured by the Hessian fly and the chinch bug. The final result was that we got, this summer, 170 bushels of wheat from about eight acres.

Those of you who have been able to follow the history of this field will see that we have been able to obtain a crop of hay, a crop of corn, a crop of wheat, and have the ground again reseeded to clover in two years. The ground has been plowed but once during this time. The labor of plowing the ground, the preparation of the seed bed, the cultivation of the crop, has been for the three crops about \$4.50 per acre or \$1.50 per acre per crop, exclusive of seed. If we succeed in getting a stand of clover, which looks fairly good at the present time, we shall repeat this two year three-course rotation.

Before discussing this experiment further, I want to call your attention to another experiment which we have been conducting. During the season of 1894, we had sixteen acres of fertile river bottom land in corn. A portion of this sixteen acres was cut up and shocked in the usual way. A portion of it was cut for soiling our milk cows beginning some time in July, and still another portion was cut up to put in a silo for ensilage. Eleven acres of the sixteen were sown to rye. It was sown in the standing corn in that portion which was cut up and shocked for fodder. It was sown after the corn was removed on the rest of the field, some of it being sown in July, some in August and some in September. That which was sown in the standing corn was sown about the first of August. That which was sown after the corn was removed was better than that which was sown in the standing corn. The late sown was about as good as the early sown. On April 27th of this year, we began cutting this rye and using it for soiling the milk cows, which was continued until May 7th when it became so tough that a large percent, was left uneaten. We probably used up two acres in this way. The rest of it was cut to put in a silo for ensilage. Something over thirty tons were put in the silo. The latter part of June, over five tons were taken off the top of the silo and thrown away. The rest of the silage was in fairly good condition and, when scattered in the pasture and in the paddock, was eaten up fairly well. One objection to the rye silage is its peculiar odor. A ton of rye silage was not nearly as valuable, we thought, as an equal amount of corn silage. On the whole, I doubt whether we would care to repeat the operation of making rye into silage even if there were no other reasons against it, which I am about to point out.

You will notice in this experiment that we have gone a step farther than we did in the other experiment which I mentioned. In that experiment, we got three crops in two years. In this one, we have two crops in one year. We thought to repeat this operation and therefore planted the field again to corn as soon as the rye was taken off and also the rest of the sixteen acres which I mentioned before, and also four acres more which had been in clover and millet the year previous. This whole twenty acres was given substantially the same preparation and was planted to the same variety of corn during two days of the last week in May. On account of the excessive drought, none of this corn came up until after June 20th-21st we had a rainfall of— $\frac{1}{2}$ inches, then a marked difference occurred. Every portion of the field which had not been in rye came up promptly with a good stand and grew thriftily. That portion of the field which was in rye came up slowly, was only a partial stand and, throughout the season, barely struggled for existence. It happened that in planting the corn, the rows passed diagonally across that portion of the field which had been planted in rye and that which had not been. The difference was so marked as to cause wonder and astonishment on the part of

every one who was shown the field. Many experienced persons said to me that they could not have believed that such marked differences could have existed with all the conditions the same except the rye treatment, had they not seen the results with their own eyes. When we came to harvest the crop, we found that there were twice as many good ears where there had been no rye, that the ears were eight to nine inches long, instead of six to seven inches long, that there was about two and one-half times as much fodder, and that, finally, there were 49 bushels of corn in place of 16 bushels where rye had been sown, counting 70 pounds per bushel.

The question arises as to what made this most striking difference in the yield of the corn. All the land was substantially alike. It was fertile, river bottom land and both portions had been heavily manured with stable manure during the past winter. The difference could not be due, therefore, to any lack of fertility. I think there can be no question that the fair crop of corn in one case and the almost total failure in the other, was due to the fact that there was not enough rainfall to grow two crops in one year.

It has been found, for example, that to grow a pound of dry matter in Indian corn, three hundred pounds of water must be evaporated through the leaves. In the case of oats, it has been found that it requires five hundred pounds of water for each pound of dry substance produced. These figures, perhaps, may be taken as the minimum and maximum amounts required for production of vegetation.

In some artificial experiments which I made myself, I found that the evaporation from oats and oat stubble ground during 86 days between June 9th and September 26th was equal to nearly twenty-eight inches of rainfall. This was a good deal more than the rain which fell during the same time. It is more, I believe, than the total rainfall for this year.

It is evident, therefore, that before we could grow another crop of oats on this land, we must let the land rest so that it can catch up in soil moisture. The difficulty, therefore, in our rye field was that the growing of the rye up to May first had so exhausted the soil of moisture that, together with the subsequent deficient rainfall, the land was unable to grow a crop of corn. Probably, if the rye had been plowed under early in the spring, the deficiency of soil moisture would not have been so marked. Probably also, if the rainfall had been abundant, we might have found much less disadvantage from the growing of the rye crop, and, possibly, if the rainfall had been excessive, we would have found no injury whatever. At any rate, we are repeating this experiment to see what the result will be in a different season, which we hope to have next year.

This then, is the problem in intensive agriculture that I wish to suggest to you. The amount of vegetation which we can support on a given area is conditioned upon the amount of soil moisture. We are not prevented from raising two ordinary farm crops in one year because of a lack of sunshine, or because of a lack of plant food, but we may be prevented from doing so because of insufficient amount of soil moisture, which is conditioned upon the rainfall.

SEEDS AND SEED BEDS.

By J. E. WING, MECHANICSBURG, O.

What is a seed?

In a general sense, it is anything that is planted to increase its kind. That is, the grain of wheat, of corn or of clover. Yet we speak of "Seed Potatoes." That is not a strictly accurate expression. Seed potatoes are not seeds.

A true seed is a tiny plant coiled up and packed snugly away beneath a hard

outer covering or "hull." It is alive, but dormant. It is asleep. It does not grow, or move or change in any way that we can see, it may be that it may be dried until it contains little moisture, or it may perhaps be fully saturated with moisture and yet live.

How do we know that it is alive? We know that when we give it certain conditions of moisture and of heat and perhaps light, it begins to organize new cells, to grow. The shoot bursts its prison walls and becomes a new plant, like unto the parent plant that produced it. So we say that it is alive. We may as well stop at that. What the mysterious thing is that lives in the tiny seed and sleeps until its time comes to awaken, we may never know. I for one am content to leave it among the things that we can never explain, and perhaps it is as well.

But this we do know, the seed has life and for a certain, rather indefinite, length of time it keeps it. Heat will destroy it, cold will not, if moisture is absent, neither light nor darkness affect it.

Some seeds there are that perish with the loss of moisture. Some of the nut seeds are of this class.

The question of the duration of life of seeds has not been very definitely decided.

For some seeds very great vitality is claimed. The mummy wheat of Egypt has been claimed to be many thousands of years old and yet be alive and capable of growing when sown. I think those stories are not well proven. Most seeds lose their vitality within ten years.

It is an anxiety among breeders that "like produces like." That is very true. The seed produces a plant *like* the parent plant that produced the seed. It is **LIKE** the parent, but is not ever an *exact reproduction*.

This is true of all plants, but is more especially noticeable with our cultivated plants. It is this fact of variation in seeding plants that gives us our chance for improvements in varieties. It is this fact of variation that puts us on our guard against the danger of deterioration in our crops. There is a principle in Nature called Atavism. That means the way seedlings have of reverting to some former type. It is very apt, too, to be an inferior type to which the reversion goes. That is, it is a type that to us is inferior, for it is a kind not so well adapted to our uses.

Now the seed contains a tiny plant all ready to begin growth and produce stem and root and leaves. But in starting out in business for itself, the young plant must have help. It needs a bank account to draw from before it can get itself established as a regular, independent plant. It takes time and strength for the stem to push up to the light, and the roots to grow out and find the moisture and food of the soil and appropriate it, and then there must be leaves to digest this food before it is available for cell building.

So the little plant is provided with a store of food in the seed, in the shape of starch grains and protein, all ready to be quickly absorbed by the growing plant and changed into root and stem and leaves. That is what makes seeds so valuable to us. They are store-houses of food, meant for the use of the young plant.

It is true that with some fruits we make more use of the material surrounding the seeds than of the seeds themselves. Take for example, peach or strawberry. In these cases, however, the flesh surrounding the seeds is meant to entice us to eat the fruit and as we do not digest the seeds they are thus scattered.

Now this little seed, ripening on the parent stalk and falling to the ground, requires certain simple conditions before it will grow and becomes a plant again. And these conditions vary somewhat with every plant and variety. Yet they are nearly all governed by some very simple general rules.

I will name first the one thing that is required for ALL seeds, that is moisture. Yet even moisture is required in very different degrees for the various plants.

For our farm seeds, wheat, oats, corn and vegetable products, moisture must

not be too abundant. The soil must not be saturated with water. That would shut out the air and the young plant after it begins to grow, will quickly perish if it has no air. That is, the seed will "rot in the ground," as we say of our corn in an extremely wet spring.

So our seed-beds must be DRAINED. That is one thing sure. None the less it must have moisture.

In order that our seed beds shall have moisture it must not be too loose and filled with air spaces. That is, it must not be cloddy. It must have a good connection with the earth below, so that the water may readily rise by capillary attraction. It must be a FIRM soil.

To produce this condition, I know of nothing so good as a roller following a thorough plowing and harrowing.

Next, the seed-bed must possess a certain degree of WARMTH. With some seeds, particularly corn, this is a vital point. We all know that seed corn rots in a cold ground, after a while, even though all other conditions are right. We can do much toward warming a soil by taking out the surplus moisture, and this means under-drainage.

Did you ever think that it takes as much heat to drive away the surplus water in the soil in the slow familiar way by evaporation that we see going on every day as it would to "boil it down" and evaporate it in a steam boiler or evaporating pan?

After we have drained our seed-bed, we have done all we can toward warming it, and must wait for the sun to do the rest. Very often indeed, it pays to wait before planting. This is especially true of corn.

Now let us look at the depth to which our seeds should be buried. Here again we find very different requirements with different seeds. Some, like the clover, do best to be very close to the surface. They germinate and grow without much warmth. They naturally start very early in the spring. These seeds if deeply buried, will not grow at all, even if the conditions of warmth and moisture be right.

They seem to know that the distance to the surface is too great for their feeble powers and they will not make the attempt to grow.

When in a year or two, perchance, the plow brings them up near enough to the surface, they germinate and grow. The same is true of many seeds. You may not have seen a certain weed on a piece of ground for years, yet the upturning of the land by the plow will reveal countless seedlings, that have simply "bided their time."

Too shallow planting of most seeds is dangerous, mainly because of the chance of drought killing the young plant before it has rooted, or the seed may not get enough moisture to germinate at all. On the other hand, I am convinced that with our modern methods and machinery, we more often plant too deep.

There are several evils that may result from this:

First, the seed may be put in ground too moist and cold to germinate. Then if it grows at all the long distance that the stem must travel, before it reaches the surface, draws very heavily on the stores of reserve force of the plant, and when it has reached daylight at last, it is like a half-drowned mouse, it must gasp for breath awhile before it goes on growing.

Either wheat or corn, when planted too deep, will throw out roots above the seed any way, the position of the seed has very little to do with the final arrangement of the roots.

There is very little to be gained by the practice, and much to lose. The old gardener's rule of planting a seed five times as deep as its own diameter, is a good one and safe, provided you plant in a perfect seed-bed. As we seldom do this we must plant somewhat deeper.

Wheat, when planted too deep is more readily winter killed than if planted more shallow. The reason is, that in the freezing and thawing weather of spring, the deeply-buried seed and its attendant roots, are too firmly anchored to be moved, while the upper portions are raised somewhat. Thus the roots are broken in two and the plant may die.

Notice that timothy grass, a surface-rooted plant, rarely freezes out. Clover very often. The timothy is already out, you see, but ready to "grab a new hold" at the first opportunity.

A seed will germinate and the plant will begin to grow as well in pure quartz sand as in anything, but when the store of nourishment in the seed is exhausted the plant stops growing and after a while dies. Why? The roots could find no food in the sand on which to feed.

It is important with the baby plant, as with the baby animal, that its food be found near at hand, when it begins life. The vigor obtained then, will be a help all through its growth.

So if it be "stunted" by lack of food at first, it will always be smaller and weaker, as with animals.

The plant food must be close at hand and readily available.

If it be stable manure it ought to be as finely divided and evenly put on as possible. If it be commercial fertilizer, I would not put it in a mass directly over the seed, but distribute it evenly through the soil.

Now, to sum up, our seed-bed should be mellow; that roots may penetrate it readily.

Firm, that water may rise from below.

Warm, for heat is life to plants.

Moist, for water is the plant's life blood.

Fertile, for plants live by eating as do animals.

"From nothing you can take nothing."

TILE DRAINAGE.

By J. W. KIRK, ADARIO, O.

[Read at the Huron County Farmers' Institute, held at Greenwich,
December 23 and 24, 1895.]

We have heard to-day that "corn is king." While I would not forswear allegiance to the king, yet I feel sure that his throne can never be fully established unless it is built on the broad and deep foundation of tile drainage.

Tile drainage, tillage and clover are three requisites to successful agriculture, and of these three tile drainage is the one that underlies all the rest. I wish to show you that without drainage there can be no thorough tillage or successful clover growing.

While I deem it eminently proper that we should make our institutes practical, yet it seems necessary to give a part of the theory of tile drainage, and then follow with some practical illustrations from my own experience.

Plant life, as well as animal life, requires both water and air for its existence. The soil, when in proper condition to support plant life, is moist, but not wet. When the soil is saturated, as after a rain, we have surplus water. The soil is filled with minute tubes or interstices, which draw up the water from below by capillary attraction. Between the particles of soil there are larger spaces which should be

filled with air. The surplus water fills these spaces by hydrostatic pressure; thus shutting off the air from the plant roots. The first is called capillary water and the second hydrostatic water. The sponge is a good illustration of capillary and hydrostatic water. Dip the sponge in water and you fill the large spaces; squeeze out the water and air is admitted, but the capillary tubes are still full of water and the sponge is moist. A lamp wick shows the action of capillary attraction. The fine tubes in the wick pump up the oil to the top of the wick, but it will not overflow. The finer the pores the higher the fluid will rise. A simple experiment is to take several small glass tubes of different sizes and place them on end in a vessel of water, or take two small window lights and place them in water with the edges slightly apart like the pages of a book. Hence the finer the soil the more moisture it will retain. Capillary water is necessary to plant life. Hydrostatic water is death. Primarily, then, we drain to get rid of surplus water.

Surplus water should be removed through the soil downward, because it makes tillage easier. Natural water courses are usually crooked or run diagonally through a field. These may be straightened by open drains, but are still very inconvenient to till around, but tiles laid in the general line of natural drainage make tillage a pleasure.

Tile drainage removes all the surplus water, not only on the surface but in the soil and subsoil, and at the same time prevents loss of fertility by washing. Thousands of acres are almost ruined by surface washing, which could be prevented by systematic tiling. Manure applied to the soil will not be carried off, but carried down to the roots of the plants. It also prevents drowning out of the crops. As before stated air is necessary to plant life. Hydrostatic water drives out the air and the plants drown. On how many thousands of acres annually in the State of Ohio do we see the young plants meet a premature death, and the verdict, if tried before a competent jury, would be, died of wet feet. The soil also becomes packed or puddled and the air spaces are thus permanently closed.

It enables the farmer to work his soil earlier in the spring and sooner after rains. This is a great advantage, because it permits more thorough tillage, and because a few days' difference in the length of the season may make the difference between success and failure.

Water standing in the soil causes the vegetable matter to undergo acetic fermentation, thus making the soil sour and heavy, unfit for cultivation. Drainage removes the cause, and thus sweetens the soil. Tile drainage enables crops to resist drouth by permitting a more thorough pulverization of the soil, which prevents the capillaries from coming in contact with the air, thus preventing evaporation and consequent baking of the surface, and by causing the roots to go deeper into the soil. During the night the temperature of the soil is reduced by radiation and moisture is condensed from the air. Drained soil presents to the air many times as much surface as undrained, hence the moisture will also be condensed within the soil to a considerable depth.

Tiled land becomes more spongy as it overcomes the tendency to pack and thus reduce the size and the number of its capillaries. Take a sponge and compress it. You reduce its capillaries and it loses water. Just so evaporation of surplus water compresses the capillaries and air spaces and the plant cannot resist drouth.

The action of frost in heaving out roots and plants is very peculiar. How many of you in going over a field on a frosty or cold morning, in the winter or early spring, can explain the honey-combed condition of the surface? You say that frost did it; but can you tell how? Capillary attraction brings moisture to the surface, but can take it no further. Only two forces can remove it—frost and warm air. As fast as these remove it the capillaries will renew it. The frost

first freezes a thin layer of this capillary water at the surface of the ground, and keeps on freezing thin layers each under the bottom of the preceding, and lifting the others by its own thickness. This process is continued until the field may be honey-combed an inch or two deep. It is a continuous process of growth from the bottom all night long. This stool ice freezes around and partly under clover and wheat plants, and will lift them half an inch or more each clear frost night. Next day the sun melts the ice and the soil settles back, leaving the roots lifted. The next frost continues the process, and so on till they are lifted clear out of the ground. How often I have seen whole fields of clover thus lifted with their long tap roots sticking up six inches or more all over the field, monuments of blasted hopes and depleted purses.

Burns has said: "The best laid plans of mice and men gang aft a-glee." But they need not miscarry with the farmer so often if in his plans he uses judicious tile draining. Tile drainage prevents heaving by the frost by lowering hydrostatic water, so that only the smallest pores can bring it to the surface. The surface soil becomes dry so quickly that there is a layer of dry earth like a blanket over the capillaries, and the frost cannot reach them. The same blanket keeps the air from coming in contact with the tubes and thus prevents evaporation in dry weather.

Tile drainage makes the soil warmer by admitting the warm air into the soil. As fast as the water is drawn off from below the warm air follows. A dry soil can be more readily warmed than a wet one. The surplus water which freezes in winter must first thaw and then evaporate, both of which are very cooling processes. Did you ever try to thaw out a pump frozen solid with hot water from above? If so, you will need no proof that it is a very slow process. Notice how chilly the air is in the spring when the frost is leaving the ground. The thawing takes the warmth out of the air, just as the ice in the ice-cream freezer takes the heat out of the cream. But when the ice is melted the cooling process is not complete. Science tells us that it takes four times as much heat to evaporate a given amount of water as it does to raise it from the freezing to the boiling point. R. S. Thompson in his "Science in Farming" says: "It requires more than twenty times as much heat to raise the temperature of a wet soil to a point where the seed will germinate as would be required by a dry one." Wrap a jug of water in a wet cloth, and the water will remain cool as long as the cloth remains wet. So with the soil, as long as the surface is saturated the soil will not get warm. Notice how chilly we become when our clothes are wet. Waldo Brown in his "Success in Farming" says that "an experiment was made by a number of tests in adjoining fields, one drained, the other undrained. The average temperature in the field that had been drained was six and one-half degrees higher than in the other." By keeping the air spaces open the warmth from the subsoil arises and keeps the ground warmer. The subsoil at five feet is twenty degrees warmer than the frozen surface. Thus the soil becomes fit for tillage earlier in the spring and remains so much later in the fall, in this way lengthening the season. Tile drainage keeps the air spaces open and permits the warm rains to carry down their warmth into the soil. Rain cannot descend through the capillaries; but into the large air spaces the rain sinks rapidly.

One of the best agencies for loosening the soil is frost. Take this sponge and fill it with water, then expose it to the action of the frost for a short time, and you will find it frozen on the surface only; but squeeze the water out and expose it to the cold air and you will soon find it frozen through. Then reverse the process. Expose the sponge filled with water, also one with water squeezed out and see how long it will take the one to thaw and how short a time for the other.

In the same way frost will descend much deeper into the drained soil, loosening it up much deeper than otherwise.

Removing the surplus moisture makes the ground in a better condition for pulverization. Pulverize means to make into dust. Wet soil will not pulverize, but becomes its opposite—mud—if stirred and will then bake. Hence a wet soil will not admit of thorough tillage.

Tile drainage increases fertility. Dry earth will absorb much fertility from the air. Soil with the air spaces filled with water cannot do so.

In some of our soils there is undecomposed humus or vegetable matter. By tiling and cultivation the air is admitted, decomposition is hastened, and the humus becomes in condition for plant food.

It increases the area of root pasturage. Plant roots will not reach down into the wet subsoil, but will run along the surface; but land well drained will become loose and in a condition for root pasturage many inches below the surface. Ralph Waldo Emerson, in an address at Concord, Mass., said: "This year a very large quantity of land has been discovered and added to the agricultural land, and without a murmur of complaint by any one. By drainage we have gone to the subsoil, and a Concord under a Concord, and a basement story of Massachusetts more valuable than all the superstructure. Tiles are political economists. They are so many young Americans announcing a better era, and a day of fat things." How many farmers are paying tax on land which produces practically nothing, when, by "discovering the basement story" under it by means of tile drainage, they may have land that will produce abundant crops and not only pay the taxes, but make a handsome surplus to add to the income of the farm. So much for the theory; now for the practical application.

In the early history of this section of country, what is now known as Butler township, Richland county, was very swampy and wet, covered with a dense growth of timber, and far from being an attractive place. It was not settled till after all the other townships in the county were. Then it was thought that "up among the beech" was "next to the jumping off place." For many years after the township was settled up the farmers tilled the dryer spots, and plowed around the wet places. By degrees these dry knobs lost their fertility, while for quite a distance from the swamps the water backed up, drowning the crops and causing the land to become hard and sour. Of late years, however, much of this wet land has been reclaimed, and while perhaps not a garden spot of the world, yet it will compare very favorably with other parts of the county.

In 1875 I moved on the farm where I now reside. The farm had been run by renters for many years. It was naturally very rich soil, but it was dotted by numerous cat swamps, many of them overgrown with a dense growth of bushes and trees. It was a perfect Eden for mosquitoes, mud-turtles and frogs, and a hotbed for fever and ague. I think the largest mosquitoes I ever saw were produced on the farm, while the music of the frogs was simply stunning. The dry land had been plowed too wet, and insufficiently fertilized, until portions of it would not raise any crop of consequence. The first year my corn crop was almost a failure, and the wheat crop I did not cut but plowed it under.

As illustrative of the effect of tile drainage on such a farm I shall endeavor to give you a little of my experience in reclaiming this farm.

Soon after taking possession I began in a small way to drain the wet places. Only a few acres at a time, as I could afford it. I found that these swamps soon became feeders for the rest of the farm. They invariably gave me an excellent crop, and as they did not need manure I soon had a good supply for the poorer parts of the farm. I did not attempt a thorough system of drainage, but what I did has been very beneficial in its effects.

The first tiling I did I made the mistake in common with many of my neighbors of using too small tile. I had an experience similar to that of A. I. Root with his Englishman. I employed an old Scotchman, who would only do the work as he

wanted, and would persist in making the drain too wide, and making the sides as smooth as if planed. Of course, it being my first experience, I depended entirely on him. He recommended the use of small tile. Said it was better, as it ought to be flushed frequently. And water would not hurt the crops if it was running off all the time. I have long lines of one and one-half and two inch tile, and I have long since proved his theory to be a fallacy. I have taken up many of them, and shall have to take them all up. My later experience has been more satisfactory.

In the spring of 1888 I began laying larger tile. My neighbor and myself put in a partnership drain some sixty rods north through a bank eight feet deep, instead of following the natural water course through the timber. I am inclined to believe that this was a mistake, as it is usually safest and best to follow the natural water course. In digging this main we were much troubled with quick sand. The sides of the drain caved in until we had ten feet or more wide for several rods, and the sand worked into a stiff mud. We only succeeded in our work by placing two-inch plank one foot square under each tile. We could not use longer pieces. We were fearful it would not work, but it did and has worked well ever since. We laid an eight-inch main until we came to the swamp; then we extended a five-inch main to the southwest, draining the west field not thoroughly, but very well. I have noticed that in our black loamy soils tile drains draw much farther than they do in clay land. I have but a single drain through the east half of this field, and after a rain I can see that it draws from four to eight rods on either side. A large portion of this field was so wet that I could only raise a crop in very favorable seasons. Since draining it has never failed to give me good crops, and several times two crops in a year.

Through the swamp on the east side I have run three inch laterals four rods apart. They drain the ground thoroughly. I have had this in corn now for five years in succession, and the past season I raised one hundred and fifty baskets of corn to the acre.

I extended one drain clear to the top of the incline. It does its work, but the effect is not so apparent. It does not act so quickly or reach so far.

In the spring of 1895 I began another system of drainage. Running a six inch drain some seventy rods through the swamp; from thence we continued to the next swamp with four-inch tile, and will extend it further with three-inch. We cut a three-inch branch to the southeast, draining the low land there. In the west side of the ten-acre field I have three-inch laterals, four rods apart, and they seem to thoroughly drain the ground.

I expect to run another six-inch drain through the west side of the swamp, with laterals four rods apart. Thus giving it two outlets. The water runs both ways, so I follow the natural water course.

I planted the ten-acre field to corn and raised a splendid crop, where, without drainage it would have been impossible to raise any crop at all. I have examined the field closely this winter when the soil was saturated and found the ground comparatively dry with scarcely any mud. So I concluded that four rods apart is close enough for that kind of soil.

I aim to make our drains two and one-half feet deep, and am persuaded that for our soil that is better than deeper. Perhaps the deeper the drain the better it will stand drouth, because of the increased depth of porous soil, but the drains do not work so quickly, and for all ordinary seasons are better. I have experienced no evil effects from my shallow drains during the late dry seasons and some of them are only twenty inches deep.

I am not sure at the present price of land that it will pay to thoroughly drain our uplands, but I am satisfied that it will pay on our rich loamy land.

ECONOMIC POSITION OF THE FARMER.

By MR. W. B. GREENE.

[Read at the Farmers' Institute held at North Amherst, Lorain County, January 10 and 11, 1896.]

When human beings were first upon the earth, they found themselves amid boundless natural resources all untouched, and ready to be turned to advantage. Scientists picture original man as a savage living upon the spontaneous fruits of the earth and also preying on the wild animals surrounding him and only able to maintain himself by the superiority that his partially developed intelligence gave him. He lived upon the flesh of the game he captured and clothed himself with their skins. Contests with the beasts of the field increased his mental power and this manifested itself more and more in the mechanical ingenuity which invented and manufactured weapons of the chase, and in the cunning stratagems by which he took advantage of beasts much better endowed than himself with natural weapons and physical strength. As his intelligence increased it developed providence and foresight—and he began to tame and preserve the most useful domestic animals. The dog, in reality a tame wolf, was perhaps his first possession, on account of its utility in aiding the chase. By degrees he numbered as his property the ancestors of the sheep and the goat and the ox, and the hunter by degrees became a herdsman. The beginnings of agriculture probably occurred among people living where plant life flourished most abundantly and the development of providence and foresight taught the domestication of plants as it did of animals. Cultivation of the soil was an art easily acquired when the fertility of the earth had never had any drafts made upon it. In the book of Genesis, read aright, we may perceive the history of the early struggles of the human race in subduing the forces of nature, and the gradual evolution of the various branches of what is now known as agriculture. The garden of Eden is the type of the condition of things when the original man lived in a climate that rendered clothing and shelter unnecessary and where the fruits of the earth, spontaneously produced, enabled him to subsist without labor. As numbers increased, men were forced to live in less favored localities and were compelled to use their mental and physical endowments to sustain existence. They were obliged to exert themselves to ward off cold and hunger. Naturally the first men exerted themselves in the line of least resistance. The life of the herdsman was easier than that of him who had to dig and delve the hard and unbroken soil. The latter class however developed the greater strength and perseverance. They acquired the manner, and customs of a more permanent and settled life. As numbers continued to increase it became evident that fixed habitations and permanently cultivated fields would sustain a larger population, than could be sustained if the earth was treated simply as a place for the hunter and herdsman. The story of Cain and Abel typifies the contest that invariably arises between the nomadic herdsmen who wander from place to place with their flocks and herds and the settled agriculturists who have permanent fields and dwelling places. The same contest is repeated wherever these two classes come in contact. We have in this country witnessed the struggle between the Indians of the plains and the advancing white settler. The nomad invariably has to succumb to the superior numbers and the greater tenacity of purpose of the cultivator of the soil. The curse of Cain may be conceived to be the evils which follow in the train of such contests. Necessarily greed, selfishness, and utter disregard of justice, originally having their rise in what seems to be an unavoidable struggle for existence, become a part of the characters of the victors and taint for many generations the moral nature of their descendants. Cain is the representative of the advance guard of all civilization, the first settled tillers of the soil, the first who treated land as individual property. The ancestors of the Jews

were nomads who had to retreat with their herds before the farmers of Mesopotamia, and the curse put upon Cain is akin to the malediction of the pioneer upon the coming civilization, which deprives him of his solitude and forces him to seek it further and further in the wilderness. The Jews became farmers themselves, in time, but they always felt the hereditary hatred of their nomadic ancestors towards the settled nations of Chaldea and Egypt. The Chaldeans had oppressed their father Abraham, and the Egyptians had done the same to the sons of Israel when they sojourned on the banks of the Nile. The property rights, absolutely necessary to a systematic and permanent cultivation of land and the development of civilization were not established without bloodshed, and even in modern times people have been known to quarrel over them. But while the establishment of conditions which enables the earth to sustain the largest possible population, implies the cruel extinction of all who will not submit to these conditions, nevertheless, it gradually develops the qualities of body and mind that make it possible for men to become what we call civilized. The power of organization includes self-denial, patience, and obedience to authority. It also in a certain degree develops an interest between man and man, which first arising from self-interest, attains its highest development in charity and affection. The civilized man exceeds the savage in all these higher qualities.

When the world was thinly peopled, men could avoid quarrelling by avoiding each other. When strife arose between the herdsmen of Abraham and Lot, it was easy for the former to say, "Is not the whole land before thee, separate thyself I pray thee from me, If thou wilt take the left hand, then I will go to the right, or if thou departest to the right hand then I will go to the left."

Civilization, the art of living together, has been gradually learned. To attain it, various forms of government have been tried. Under some of them a very high degree of success in a peaceful and comfortable and happy state of existence has been attained for longer or shorter periods, but sooner or later these forms of civilization have failed to attain the end in view. Either while adapted to small populations these governments did not answer for large numbers, or there ensued in time under them a division of the people into classes, and some of these classes found the government well adapted to their prosperity and happiness and others of these classes did not. Now it will probably be admitted that an ideal civilization or government is one in which all the individuals of the community, have as long as they conform to the laws or rules of that community, an equal chance to pursue what is by the general agreement of men considered a peaceful and happy and prosperous existence. All civilizations and governments have this ideal in view, but so far no one has attained any thing near perfection. The right of every citizen to life, liberty and the pursuit of happiness is the foundation principle of the government of the United States. Yet we know from the discontent that pervades the minds of so many of the population that even our boasted government does not achieve the condition of civilization that it aims at. The inquiry naturally occurs, what is the reason of the failure of civilization so far to bring about the highest average happiness of the population who seek it? Is it possible to find the cause of this failure and suggest a remedy? It has occurred to me that as the farmer, the settled cultivator of the soil, has from the very beginning been the unit out of which the foundations of civilization have been formed, it may be that it is the derangement in some way of this foundation, that destroys the perfection of the structure built upon it. In other words the position of the farmer under any government, and his proportional importance to other necessary classes of the community, have had in the past, and will continue to have the greatest effect in making or marring the success of that civilization, which is the ostensible aim of all governments. The best civilization is that which gives all men an equal chance for attaining a condition of reasonable contentment. It should be an investment in which every sharer will

be sure of attaining a moderate income, and not a lottery in which a few obtain big prizes and the larger number draw blanks. We are apt to measure a civilization by the attainments of those who are fortunate in drawing prizes and do not much regard the misery of the great majority who get little or nothing for the ticket they spend their lives to purchase.

We have already seen that the book of Genesis shows the division of the human race into nomads, and settled agriculturists. It also shows the differentiation into artificers, artists, and traders.—As a rule nomadic peoples easily settle down to agriculture when the increase of population compels the change.—The savages we find to-day, who seem incapable of any advance from their present condition, are believed by scientists to be unlike the first ancestors of the human race. The latter had in themselves the inherent ability of development, but the savages of to-day are men who have lost that ability by ages of neglect or are the descendants of races never possessing it. Some scientists even believe that modern savages are degenerations from more advanced poples.

The original agriculturists were men of universal accomplishment. They had not only to take possession of the land, they had to protect it, to invent and manufacture all the tools and dominate and tame all the animals necessary to its cultivation. They were farmers, manufacturers, artisans, soldiers, in fact they contained within themselves the germs of all other occupations and trades. To protect themselves from outsiders and each other, they united in communities, built cities, made laws, originated governments. They were rulers, lawgivers and priests. To solidify their governments and laws, they set up religions and gods. They found they needed spiritual as well as physical weapons. We find types of these ancient farmers in the early history of all nations that attained importance, in Chaldea, in Egypt, in Greece and Rome. It is the development of these men that we trace in the growth and fall of these nations. It was the free and independent cultivator of the soil who tilled his farm with his own hands, and who lived among neighbors who did the same, who built up the great nations of antiquity. As long as farmers of this kind formed a fair proportion of the community, the nations they belonged to flourished, but when the cultivation of the land became the business of the slave and the serf, then the decay of these nations had become far advanced.

The primitive farmer did most everything for himself, he worked to supply his own wants and those of his family. As he came into relations with others he became a trader. As wealth increased, he became a soldier and helped to organize government. Peace led to further accumulation of wealth. Special occupations grew up. Successful defensive war led to wars of conquest. Constant success led to the aggrandizement of Kings and leaders. Spoils and slaves, made the farmer citizens more and more adverse to personal labor. In time, the original farmers, by conquest, became the ruling class, and although still owning the soil they turned its cultivation over to serfs and slaves. A special class of fighting men grew up. They strengthened the arms of the King. The King began to consider his personal glory of more importance than the welfare of his people. The decadence of the nation became noticeable whenever the number of free and independent citizens who left farming for other employments and occupations, became more than the due proportion.

In the book of Samuel we see depicted a state of things when the children of Israel had grown rich in settled agriculture, each man under his own vine and fig-tree. They began to clamor for a King to protect them from their greedy neighbors, the Philistines, who wanted to get for nothing the agricultural productions of the Israelites. The dangers of Kingship appear to have been well understood by the prophet Samuel, who in effect prophesied the gradual turning of a government strong against its enemies, to a despotism where the King taxed the people beyond endurance to maintain his own glory and the splendor of his

court. The reign of Saul with its unsuccessful struggle against the Philistines was succeeded by David's career of conquest. The frontiers were pushed back. The peaceful reign of Solomon was one of heavy taxation, which brought ruin to many of the farmers. Others became traders who invested their wealth in land and thus the land came to be owned by a few great men. The prophetic books are full of fulminations against the causes by which the decline of the agricultural classes was brought about, the oppression of the people by the great princes who had grown great through trade and court favor. The original simplicity of manners, when the people of Israel lived in patriarchal plenty and kindness among their neighbors and kin had passed away and luxury of foreign growth had taken its place. The great landed proprietors spent their incomes at the courts of Jerusalem or Samaria. The people who actually worked the land were either slaves or Hebrews reduced to the condition of serfs. The honor of tilling the land personally had departed. In the story of Joseph at the Egyptian Court, we have given, the history of method by which Pharaoh destroyed the free landholders of Egypt. The history of Persia while differing in details repeats the story of the Israelites and of Egypt. The conquering armies led by Cyrus were drawn from the class of small landholders who tilled their own lands. In time it ruined them to become the soldiers of a despotic King. These are histories of nations who believed in a kingly form of Government and it may be thought that it was the oppression of the King that finally wrought the decay of the nation.

We find however that the republics of Greece and Rome fared no better. The citizens of Athens began to lose their power as the class of small landholders who won the victories of Marathon began to disappear. The same absorption of land by the wealthy few took place in Athens as had occurred in Egypt and Palestine. There was no large class from which the nation could draw men of the free and independent spirit which constituted the greatness of the Athenian commonwealth. The blight of slavery crept in with the growth of wealth accumulated in foreign commerce. The lands of the Roman Republic were first cultivated by native yeomanry. As conquests were made, the surplus citizens of Rome were sent to occupy the land which was allotted among the colonists. In process of time all Italy was covered with the small holdings of men who farmed their own land. From this class was drawn the material of the Roman armies and the men who became famous as orators, statesmen, historians and poets. It was the recognized policy of the republic to thus breed up sturdy and independent citizens who might counteract the corrupting influence of the life of the city. Even after the Republic began to shake before the power of Generals like Scylla, Marius, Pompey and Cæsar, this policy was still pursued. These men instead of giving pensions to their discharged soldiers established them at public expense upon small farms, from which they were to obtain their living by personal labor. It was this policy that sustained the life of the empire, after the Republic had fallen. Both Gibbon, and Sir Archibald Alison agree that the decline of the Roman Empire was due to the abandonment of this policy. As the wealth of Rome increased from foreign commerce and the spoils of conquered nations, successful merchants and politicians, by degrees, bought up the small farms of Italy and began to cultivate immense estates by slave labor. It took some centuries to do this, and many attempts were made to counteract this tendency. The decadence of the strength and purity of Roman institutions kept pace with the destruction of the Roman yeomanry. Rome lasted longer than the empires that preceded her because she knew the value of the free and independent farmers. It was only when the strength of this class had been seriously impaired by civil wars that the empire became possible. The solidity of the empire was due to the sterling qualities which the farmers of Italy imparted to their descendants. For a long time in the armies of Rome they upheld and strengthened her dominion. Modern nations have been

comparatively free from the plague of slavery, and yet their history indicates the danger of neglecting or oppressing the agricultural classes. The French revolution with its terrible events was brought about by such oppression. The explosion brought about a new order of things. The strength of the French Republic to-day is in the farmers who own and cultivate each his small farm.

The lesson we are to learn from the position occupied by the farmer among ancient and modern nations, and his influence on their destinies is, that unless agriculture, the basis of all civilization, retains its proper rank and honor, and unless a proportionate number of the whole number of citizens of any country are personally employed in it, there is a defect in the organization of that nation which sooner or later will diminish its strength and perhaps destroy it. If the inducements of farming are made so small that citizens will prefer almost any other employment to undertaking the life of a farmer, if there is a tendency in the accumulation of wealth in the extension of commerce and manufactures, even in the pursuit of learning, or in the advancement of the so called learned professions, to fill up other employments and to diminish the number and standing of farmers, there is something disproportioned and unhealthy in a civilization under which this tendency prevails. Count Tolstoi, the great philosopher and social reformer of Russia, holds that every man, whatever his position or wealth, should nevertheless perform some amount of manual labor. He claims that it is the avoidance of this that causes much of the misunderstanding that prevails between different classes of society. It cannot however be said that in the United States there is as yet any lack of honor and respect shown to those who are personally engaged in agriculture. There are however some indications in the increase of the population of the cities at the expense of the country, that the life of a farmer even in the United States is not considered as easy and pleasant as life in other occupations. There is no doubt but that the conditions of city life have improved more than those of life upon a farm, that is, a poor man living in the city can have better appliances to protect him from the weather, than a comparatively rich farmer. Our people do not seem to be able to endure the ennui of farm life as well as their ancestors. The rapidity of communication between all parts of the world, the newspapers, the theatres, the schools and lecture rooms, all tend to encourage a rapid though not profound intellectual life, of which a prominent feature is impatience. There is a craving for distinction and excitement apparently inseparable from the universal system of education now prevailing, which seems to unfit many for farm life. Many people seem to be looking forward to a time when every one will live in cities, when food will be produced by some wonderful chemical apparatus, and all citizens will be seen walking about like people of leisure well dressed and happy, without any work. The success attained by labor-saving inventions has no doubt encouraged such ideas as these. If all the people who seek to emancipate themselves from the life of a farm were able to successfully do any thing else, this flocking to the cities would not be so bad. But the thought and anxiety which are often bestowed in the vain attempt to force a way into a city employment would, if applied to farm work, secure a good living and might to some extent overcome the alleged dullness of the life on a farm. It is probable that within the near future we will hear less of the exodus from the country to the cities. The improvement of the means of traveling, or rather the extension of city methods of traveling to the country, by means of trolley lines, will no doubt turn the current the other way. The introduction of mixed farming instead of the devotion to one principal crop, will aid in emancipating the farmer from many of the evils of which he now complains. When every farmer begins to raise on his farm the chief staples of his own home consumption, and only sells his surplus, then he will soon attain a real independence. It was common at one time to grow on the farm almost every article of necessary home consumption, either of food or clothing. If Farmers as a body would keep this

policy in view without carrying it to excess, they can always be the most independent class in the community.

As long as the United States protects and encourages its farmers by wise and well considered laws, so long will she retain her high rank among the nations. The wealth that depends on commerce or capital, piled up in concentrated form in large cities, is liable to depreciation and destruction from wars and rumors of wars, but the producing strength of an intelligent and energetic farming class is the greatest and most secure resource of any country. May the day never come when our country shall tend to its fall from the decline of the yeomanry who till its farms.

ROTATION.

BY R. J. BROWN, MORNING SUN, O.

[Read at the Camden, Preble County, Farmers' Institute, held February 21 and 22, 1896.]

We are all students in the great school of nature. It is not a four or six year course, but one in which we never are graduated as long as life and reason last.

The observing farmer learns many lessons from nature, and her mysterious workings in the world about him. One of these lessons is that of rotation. Certain annual weeds grow very luxuriantly for a few years, then for some cause, cease to make their appearance for a time. Then again appear and grow with all their former vigor. The seeds meanwhile lie dormant in the soil until it is again stored with food suited to their nature.

Plants, like the animals of the farm, differ much in their habits and in the different kinds of food upon which they subsist.

The cereals require for their healthy nutrition, large supplies of phosphoric acid and silica.

Some leguminous plants devour a large share of lime, while clover and some others take up a great amount of potash. From such considerations the farmer is led to grow a succession of diversified plants, or in other words, to adopt a system of rotation of crops. "Will it pay?" is the first question every practical and enterprising farmer will ask, "and in what way?"

First—By preventing a loss of fertility to the soil. By a wise provision of nature the plant food is locked up in the soil both by combination and time lock, and no lock of vault or safe is so complete as this. Dynamite and giant powder are both alike unable to break it, but time, assisted by the silent powers of heat and cold, drouth and moisture, draws back its bolts and opens wide its door and the riches in the great treasure vaults of soil are given up to plant life, for the benefit of man and beast. But a small portion of the riches are made available in a single year, however, and it is well that this is so, or our soil would be exhausted of plant food and become worthless.

Different plants require different kinds of food. This is a wise provision of providence, for while one plant or crop is feeding largely on one kind of plant food, a chemical action is going on in the soil preparing other foods for other and different kinds of plants to feed upon. Thus each crop will feed upon that substance in the soil that is best suited to its growth and development, while other elements in the soil will be held in store for other crops. In this way the soil is kept in a more normal condition than it would otherwise be if but a single kind of plant were grown upon it.

Good rotation does not necessarily insure good farming, it is only a means to an end. By proper fertilization and thorough cultivation the same crop may be

grown on the same soil for an indefinite number of years. While this may do for small plots and under certain conditions on a larger scale, yet the general farmer cannot make it profitable to crop thus year after year. The law of rest, to man, is one day in seven. The old Hebrews were required to rest their land each seventh year. In some way, we too, must rest our land, and we know that rotation somehow does it.

Second—Rotation has a tendency to destroy, or keep in check, the numerous families of insects that feed upon our crops. It interferes with their work of destruction. Each plant has its own peculiar enemy in the form of bug or worm, in its various stages of development, that work destruction to the crops, and with increasing years new immigrants come to help along the work. By changing the crop each year we take from them that upon which they subsist and thus, to some extent, at least, keep them subject to our will.

Even the white grub, the larvæ of the May beetle, may be held in check, or overcome to some extent by high cultivation and frequent rotation.

The clover midge that has been so destructive to the crop of seed in some parts of the country, is held in check and little known, where a short rotation course is followed. The cut worm, of which entomologists tell us there are twelve kinds, that feed upon the corn, do their most destructive work in fields that have long been in grass sward, or timothy meadow, but cause little damage where short course rotation is in practice.

Third—Rotation is necessary to the destruction of weeds. It is necessary in rotation that we have some crop, or crops that require thorough cultivation during the season. Corn or potatoes are perhaps the best for that purpose with us. These crops might be followed in the fall with wheat well fertilized with good commercial fertilizer, or the corn ground might be sown early with rye, or perhaps crimson clover; these would not only prevent the washing of the soil on rolling ground, but might give a late fall or early spring pasture. The fuller the ground can be gotten of small fibrous roots the less liable it is to waste, as the numerous roots hold the soil together. A good rotation might be clover followed by corn, oats and wheat, seeded to clover and timothy. Or clover followed by potatoes and wheat. Some prefer to follow clover with wheat, then corn and oats or wheat. But in this plan we might not get the full benefit of the clover, as it would be plowed up before it had finished its work. Clover is a restorative crop. It is a deep-rooted voracious feeder and even when the hay is removed the roots and stubble left behind are rich in fertility, which it has drawn from the air above and pumped from the deep soil below, and it leaves the ground rich in nitrogen, phosphoric acid and potash.

I would put all stable and barnyard manure on ground for corn, and on clay land, sow a good grade of commercial fertilizer with the wheat, which will not only benefit the wheat, but will increase the crop of clover from fifty to one hundred per cent. On my land (a clay limestone) I get the best results from pure bone meal on wheat followed by clover. A number of years ago it was not uncommon for many farmers to adopt a seven or eight course rotation. This may have been done when the soil was new and strong, but for us it is too long.

Some English writers claim that a seven or eight course rotation is as often as clover will do well with them. And even in this country I have heard people talk of land being clover sick. It is possible that much of this is sick *for* clover. I have seen farms where the soil had been over-cropped to such an extent that there was not enough plant food to the soil to grow a good crop of clover without first applying plant food to the soil. The average American farmer is too anxious to get all he can out of the soil without returning anything to it. A three course rotation, clover, corn and wheat, is the one that costs the least labor, as it requires but one breaking of the ground, and that in the

spring when the ground is moist and it is less labor for both man and team. Some people claim that clover should not come as often as every three or four years, but that some leguminous plant should be introduced. Farmers, whatever you raise, be sure that you make clover your standard crop and return to it as often as your course of rotation will permit, until you find some other plant that you can use to help you out.

I believe that the Creator of the earth intended that with proper care the fertility of the soil should endure as long as it is to be inhabited by man, and he is to earn his bread by the sweat of his brow.

FARM LEAKS.

By H. J. BROOKS.

[Read at the Union County Farmers' Institute held at Richwood, February 3 and 4, 1896.]

The subject of this paper was suggested by a member of our institute committee who insisted on my preparing a paper with the above heading. As I do not claim to be an expert at either writing essays or preventing farm leaks, do not be too severe in your criticism of this effort to point out a few of the many leaks that are constantly sapping the profits of nearly every farmer in the country.

The word "leak" is apt to cause the farmer to think of water, and of pumps, buckets, troughs and the like, all of which are apt to leak and thus cause trouble and loss of time.

To illustrate: a small boy is sent to pump water for a lot of thirsty cattle: he jumps and jerks and tugs and sweats at the pump-handle, while the cattle, not getting enough to satisfy their thirst, show their discontent by hooking each other over the watering-trough or through the fence. The boy gets angry, snatches up a club and drives the whole herd back to the pasture all the while declaring that he will never be a farmer. Another person of more mature judgment would quickly see what was wrong and would apply the remedy which would soon bring about entirely different results. The pump would be overhauled, the lead-trough properly adjusted, a hole plugged here, a crack stopped there and a leak prevented somewhere else, and then, when all was in order he would take hold of the pump handle and with that long, steady, regular motion that always counts in everything, would soon have the water-mark rising in the tank while the cattle would get their fill and go away quietly and contented. From the above homely illustration it will readily be seen that much depends upon the character and ability of the farmer himself. Where one man would make an entire failure, another might, by stopping the leaks and applying better methods, at least keep even and possibly get a little ahead. The time has passed when the only essential to success on the farm was physical strength and endurance, coupled with a disposition to apply the same.

The successful farmer of to-day must be a man of mind as well as a man of muscle. He must be a man of thought and investigation: must be able to plan as well as to execute: must know, how, when and where to buy and sell to the best advantage as well as how to produce. Yet with all his other attainments he should not be above work or ashamed to be seen in the furrow following the plow, or even in the ditch working with spade or pick. Such work is honorable, and imparts health and vigor to body, mind and soul.

In short our ideal farmer should be a thorough master of his profession from the minutest detail up; be able not only to detect and locate the leaks, but to pro-

vide and apply the remedy. In order to do this with greater facility he should provide himself with what we might here call an "indicator" which if properly used, will not only inform him of the presence of leaks but will in most cases, point out the remedy. It is at once both cheap and effective and should be often used and consulted by every farmer. What I mean by this is that every farmer should keep a more or less complete system of accounts, the more complete the better, provided it is not too complicated or hard to understand; it should be made to cover and form a record of every operation connected with the farm. If one does not care to invest in a better or more expensive outfit for this purpose at first, a good sized tablet can be had for a nickle and a pencil for a penny, which if properly used will reveal many surprises in the course of a year. Successful men in other occupations would not think for a moment of trying to do business without keeping an account of every transaction however small, then why should not the farmer do the same?

Right here it might be said that the pencil, costing a mere trifle, can be made the most useful and effective tool that can be used on the farm, or anywhere else for that matter; for, without the pencil or some substitute for it, this world would not be what it is to-day.

Brother farmers, let us use our pencils more so that we may be able to know "where we are at."

Another cause of so many failures in farming is the want of proper care in saving what has already been accumulated. Little things neglected or thoughtlessly allowed to go to waste, cause a constant leakage to take place, the aggregate of which in the course of a year, or of a lifetime would often amount to a very snug sum.

"Waste not want not," is an old adage that is just as truthful to-day as when first uttered. Another proverb runs thus: "A penny saved is as good as a penny earned." This is sometimes improved upon by saying that it is better because it is easier to collect. We are often told that the people of this country waste more than would be necessary to supply the needs of a like number of people of other countries. This may be true, but it does not follow that we should come down to their level or manner of living, but at the same time it must be admitted that we as a people, do waste a great deal that might be saved and made to serve some good purpose. We are learning some valuable lessons along these lines, this winter, straw is made to take the place of hay, and corn-fodder is more carefully saved and fed than is usually the case, yet stock seems to be doing as well or better than usual. Whenever you see a farm where plows, harrows, mowers and other farming implements are scattered all over the farm from one season to another, spades, axes, hoes and other tools left wherever last used; harness, chains and ropes in every conceivable place except where they should be; every gap, bars and gate open for the stock to roam at their own sweet will over every field and lot on the farm, you may at once decide that the owner of that farm is in need of a lecture on "farm leaks." But when his attention is called to some of his shortcomings he will very likely tell you that he knows things are not in as good shape as they should be, but he is so busy at something else that he cannot attend to these "small matters" as he calls them, now, but will as soon as he gets more time. This time he never gets because of the extra amount of work occasioned by his neglect. Perhaps more losses or leaks that occur on the farm are directly traceable to neglect than to any other one cause. Little things neglected often lead to serious losses. The saving of good seed is neglected and a failure of crops is the result. Some sanitary measure is neglected and sickness, possibly death ensues. The harness needs mending but it is neglected and a runaway, a ruined team, a demolished wagon or buggy, a broken limb, a doctor's bill and much suffering and loss of time are the results, all of which might have been prevented by the proper use of a few copper rivets and a little

time. That flue is known to be defective but is neglected and the local paper, in giving an account of the fire that ensues, says the family is in need of the sympathy and help of the entire community because the insurance had run out only a short time before and Mr. Farmer had neglected to renew it. But why multiply examples when enough have been given to convince any one that neglect is responsible, to a great extent, for the thousand and one leaks that are constantly occurring on the farm. Indeed I believe that if the farmers of Ohio could only be induced to put in practice what knowledge they already have of better ways and methods, entirely different results would soon follow. They have learned enough, through such mediums as our institutes, farm papers etc., in addition to their own experience and observation to enable them to do better, yet they fail or neglect to make the proper application of such knowledge to their work on the farm. Knowledge may be and no doubt is, a good thing, but it must be applied to produce results, and this application of new ideas or new methods, is just what some people seem to avoid and abhor above everything else: they plod along, day after day, in the same old rut doing everything just as 'grandfather' did fifty or seventy-five years ago, little seeming to realize or care that the world is moving on and leaving them far behind. Swindling schemes of every description are responsible for many farm leaks, both great and small. Barnum said: "The American people like to be humbugged," and he profited immensely by his knowledge of that fact. Farmers seem to be the prey most sought after by the smoothed tongued gentry and many are their victims. Some are too shrewd to be "taken in" by a Bohemian-oats scheme, but fall an easy prey to the shell-game or soap man at the fair, while others are always ready to take chances on the "hoss" race or game of some other description. The patent right man, the lightning-rod man, the street fakir, the quack doctor and a host of others of like character all levy tribute on the too confiding farmer and promptly collect their fees. Intemperance in its many forms also claims its victims. Many a man with a good farm well stocked, and surrounded by a happy family, with bright prospects before him, has fallen a victim to this body and soul-destroying curse, and by a constant succession of small leaks which grow larger and more frequent, he loses all; he swallows his farm, drives away his friends and dies a pauper. The passions, such as pride, envy, hatred, anger etc. are often the source of serious leaks in the income of the unfortunate farmer who is controlled by them.

Bad debts, such as security and other obligations from which he derives little or no benefit except, perhaps a little costly experience, often spring serious leaks in the exchequer of the unwary farmer. Many other things, things over which he has only an indirect control, have a great deal to do in reducing his net income. No matter how wise his management, or how prudent or economical he may be, if he is compelled to sell the products of his farm for less than the actual cost of production, he need never expect to become very wealthy from that source. Monopolies, trusts and combines of every description not only "bleed" him while he lives but compel his estate to pay an increased price for the coffin in which he is buried and the stone that marks his last resting place. Unjust taxation, and the operation of vicious or discriminaing laws, also have very much to do in cutting down his net income. If the American farmer will only make a careful and thorough investigation of all laws and governmental policies that operate to affect his interests for good or bad, he will soon see that he has discovered a very important factor in the consideration of such subjects as "farm leaks."

THE FARMER OF THE FUTURE.

By JOHN BEGG.

[Read before the Farmers' Institute held at Beaver Dam, January 3 and 4, 1896.]

The subject which we have selected for discussion to-night is one which will require an active exercise of your imagination, but nevertheless should engage the attention, and receive consideration from every patriotic citizen. For the future prosperity of agriculture is so intimately connected with the prosperity and perpetuity of the nation, that all who are anxious for the future welfare of their posterity, must feel the necessity of promoting the interests of the agricultural classes of the country. It is this for which we should live and hope, for unless we hope and work for success we will never obtain it.

It is this hope that inspires our actions and keeps alive our interest in our material prosperity. The poet says:

"Hope springs eternal in the human breast.
Man never is, but always to be blest."

So then are we not justified in asking, what of the future in agriculture? But how are we to judge of the future? Have we been endowed with prophetic foresight to enable us to penetrate the unknown future, and make known to you the mysteries it contains, or must we simply guess out the future conditions of agriculture and base our statements upon what might seem to us to be the prospective conditions of our chosen avocation fifty years from now? No, we can do neither of these, for in doing so we would fail in our purpose, to awaken in your minds a disposition to give greater heed to the many changes that are constantly taking place around us; and which are continually affecting our business interests.

But we can safely judge of the future by the past and by that means form such conclusions as to our future that will be of practical value to us in guiding us aright in our operations in farming.

Let us then briefly consider some of the changes that have taken place during the first century of our national existence, and which have caused almost an entire revolution in the methods of carrying on our agricultural operations. Changes so radical in character, that many of our young farmers can neither realize nor understand, how such a radical transformation could take place in any business in the short period of half a century. On the farm, the small sickle and old-fashioned grain cradle have been supplanted by that most ingenious labor-saving machine, the self-binder. The rapid, smooth running mower, tedder and loader have taken the place of the scythe, hand-rake, and fork; the flail and wind-mill have gone never to return, and in their stead comes a machine that threshes, separates and cleans the grain with such astonishing rapidity and perfection as to be a source of wonder, even in this day of progress. And in the home the changes have been no less radical and distinct. The old spinning wheel, whose merry hum seemed a beautiful accompaniment to the cheerful song of our maternal ancestors, as they tripped across the uncarpeted floor of the rude pioneer cabin, while engaged in spinning the yarn that was to make the clothes for themselves and families, has been transferred to the busy factory; while the rapid click of the new sewing machine has relieved the busy housewife of the slow and tedious stitch that was the cause of much weariness in the performance of her household duties.

But are these the only departments of human labor wherein such changes have taken place? Have not the effects of man's inventive power been felt in every

line of business as well as farming? Have not the applications of steam and electricity in the various fields of human industry so completely revolutionized them, that were the "Rip Van Winkles" of fifty years ago to awaken now they would scarcely recognize either their occupation or environments? Dare we, then, say that human ingenuity has been exhausted, or has the occasion for the exercise of man's inventive genius ceased to exist? Has necessity, which is the mother of invention, become barren, or will she cease to bring forth prodigies as of old to meet the requirements and necessities of mankind? I answer no. For while the same reasons may not exist for such radical improvements in the future as in the past, yet man's genius is not exhausted, nor will he cease to develop improvements that will conduce to the welfare and convenience of the "farmers of the future." And for this reason, I believe that the operations upon our farms will be performed with greater ease and comfort in the future, to those who may be engaged therein, than they now are.

The increase in our population, which has been so marked in the past in our country and which has affected our agricultural interests, will continue to experience changes in the future also. Statisticians tell us that our population has increased from seventeen millions to about seventy millions in the last five decades of our national history, and if it would continue to increase at the same rapid rate for the next century we would find ourselves, at that time, consisting of a population of four hundred million souls, a number so large that we can hardly comprehend it, and which would tax to the uttermost the producing capacity of this fertile country to feed and clothe. But, my friends, we need give ourselves no unnecessary concern about such conditions arising in our country. For while it is evident that our population will increase in the future, yet we will find, that as the country grows older, many of the causes which have operated so actively in the past, to increase our numbers, will either cease to exist or be so reduced in influence as to be scarcely felt at all.

As the country becomes more thickly populated and the lands better cultivated farms will become more valuable, thus rendering the acquisition of a home more difficult than it has been in the past. And this fact, together with the present tendency among foreign governments toward greater political freedom, will of themselves tend to restrict foreign immigration, which has been another great factor in increasing our population during the first century of our national existence. It has been said that the present financial and business depression has been, in some measure, a blessing to our land in that it has been the means of checking the inflow of an undesirable class of immigrants, and has also in some instances caused the tide to flow the other way. If this be true it will certainly compensate in some measure, at least, for the many business failures resulting therefrom.

But in saying this, I do not wish to be understood as being opposed to the proper class of people from foreign countries coming among us, for thousands of our best and most enterprising citizens are either of foreign birth or descent, and we would be untrue to our kindred and to humanity if we should favor closing the gates of "Castle Garden" against this class of loyal, liberty-loving people; people who come here with no other thought or purpose than to get homes for themselves, and who have not only adopted our customs and institutions as their own, but have ever been ready and willing in times of danger and national peril, to stand side by side with our native born citizens and defend the principles and institutions of the country of their adoption. And yet my friends, we must not forget when discussing this question that the character of the immigrants, or at least a majority of them, who come to our shores has undergone as marked a change as have the other features of the nation in the last half century, for instead of the noble class of people above referred to, who constituted nine-tenths

of the immigrants who came to our shores in the earlier days of our history, with their pure morals and exalted ideas of religion and freedom, we now have, in a large measure, that roving, discontented class of shiftless, ignorant people, coming in large numbers and bringing with them their peculiar ideas of political and religious liberty, many of whom are driven here to escape the just penalty due them for some flagrant violation of law or order in their own country. And in far too many instances do we find them marching at the head of noisy and vicious mobs, waving their red flags and openly proclaiming their socialistic and revolutionary doctrines in open defiance of all law, and putting forth every effort possible to trample under foot the principles and destroy the institutions they have in many instances sworn to protect. It is this class of immigrants, my farmer friends, to whom every patriotic citizen should object to landing upon our shores. Nay, should vote to close the gates of "Castle Garden" against them and compel them to return to or remain in a country whose conditions are more congenial to their vicious dispositions and uncultivated tastes and practices. Unless this class of people are either excluded or suppressed they will not only be a serious menace to our free institutions, but will retard the advancement and growth of morality and religion among the people and undermine the very foundations of our government. I know this is a vexed question and one which under our system of free government, is hard to solve, but it must be solved ere the people can rest secure in the enjoyment and exercise of their civil and religious principles.

So I say that while our population will continue to increase, yet it will be at a less rapid rate than formerly, and will never be such as to affect the producing classes in as marked a way as it has in the past, although the increase that will come will almost all go to the cities of our land. Already our cities have made such phenomenal growths as to astonish all who take cognizance of such changes in our country. This then ought to, and will affect the "farmer of the future" only as it creates an increased demand for his farm products, and enables him to meet these enlarged demands by increasing the producing capacity of his farms, by practicing better and more intensified methods of farming. And yet by the combination of interests, the formation of trusts, and the "cornering" of farm products, by boards of trade, the influences resulting from the increase of the non-producing classes may be lost to the farmers, and what should have contributed to his welfare and prosperity will result in his discomfort and ruin.

There are many other causes, however, that will affect the farming interests of the country in the future. The farms will no doubt be smaller in size than now, and this will change somewhat the methods of conducting our operations. Whether the farmer of the future will be the owner of the farm he operates is a question which should awaken an interest in the mind of every farmer in our land at this time. Judging from present tendencies we are inclined to believe that "landlordism" is on the increase in our land to-day, for we scarcely find a farm changing hands to-day, especially upon forced sales, but that the purchaser is a non-resident of the community in which the land is located. This may be taken as a business misfortune, on the one hand, and good fortune on the other, but the very fact that such a thing exists at all in a general way, should occasion anxious inquiry as to its cause upon the part of every one who loves his country, or has any desire for a continuance of the conditions we have enjoyed during the first century of our existence, for the terms "landlord" and "tenant" are repugnant to the natural taste of every true American citizen. The reasons for this are obvious to any one who is at all conversant with the condition of farmers where such conditions prevail, and we believe that no one thing would result so disastrously to us as a nation, as the introduction of any series of causes that would bring such conditions about. Nor am I alone in this belief; for we find that some of the best

and most conservative writers view with some degree of alarm the present tendency in this direction, and if you will allow me, I will quote a few lines from an excellent article written by Mr. Edmund G. Ross, and published in a recent number of the *North American Review*. When speaking of the effect of establishing large land syndicates upon the general agricultural interests of the country, as well as upon the future welfare of the nation, he says:

"With a large proportion of the lands of the country available for settlement held by corporations and private syndicates or otherwise, for speculative purposes, and our 'landless' poor flocking to the cities or eking out a laborious existence on rented farms, we have reached the open door of an 'European condition' of 'landlordism and tenantry' under which the class not long since distinctively known as the American farmer must soon become extinct." And again when speaking of the necessity of individual ownership of homes of the people in order to secure future prosperity and perpetuity as a nation, he says: "There is no condition so calculated to inspire love of country and loyalty to law, or so conducive to public order as ownership of the home, be it in the city or country, though this influence is more deeply and quickly felt in the rural districts. Therefore no country can be truly prosperous or long remain the home of the freeman whose population is forced to live upon rented farms; or even where the great mass of its city population is forced by the excessive values of realty to a condition of tenantry." And further, "There can be no condition like independent free holding—home owning—especially by laboring people for the stimulation of love of home and country, and no other American environment has been so productive as the farm of useful public men who have left their impress for good upon the history and institutions of their country and the world."

My friends, when a writer like this sounds such a distinctive note of warning, would it not be well for us, nay, is it not our duty to use every legitimate means within our power to check this tendency and re-establish as of old that most desirable condition which our forefathers enjoyed, of having every man, so far as industry and economy in living can secure it, the owner of his own home? Neither can we either flatter or console ourselves, by saying that such tendencies are but temporary, caused by the lack of proper legislation, or from some line of policy being pursued that can be changed as we change the public administration, for if it be true that "history repeats itself," may we not be entering upon an era of economic transformation similar to that existing in foreign countries when Goldsmith wrote:

"Ill fares the land to hastening ills a prey
When *wealth* accumulates and *men* decay;
Princes and lords may flourish or may fade,
A breath can make them as a breath has made,
But a *bold peasantry*, their country's pride,
When *once* destroyed can *never* be supplied."

I would not have you think, however, that I am an alarmist, or that I am inclined to take a "pessimistic view" of the future of agriculture, for while I must confess, and every intelligent, fair-minded man acknowledge, that there are too strong indications of the establishment of such conditions as we have just described, yet we have too much faith in the good sense and loyalty of the American people, to think they will ever allow the establishment upon American soil, of a condition of things that would either tend to destroy their happiness or prosperity, or affect unfavorably their best interests as a nation.

I further believe that through and by just such agencies as we are now employing as public educators, the American farmers will take such steps as will

insure to future generations the same sacred rights and privileges we are now enjoying.

There are other changes that will affect the future of agriculture, besides these herein enumerated. Our methods of transportation will no doubt undergo such changes from present methods by various improvements, that would seem as impossible to us now, as would our present methods have seemed to the people of fifty years ago. Our "electrical appliances" are, we believe, in their infancy.

With new necessities and requirements we will undoubtedly see new developments in this line. We believe the time is not far distant when our main roads will be converted into electric roads, especially between county seats and the more important towns throughout the country. Then the farmer will haul his grain to the nearest station instead of the nearest town or city, and it will be taken by rail from the point nearest the farm to its destination. Even now man's inventive genius is busily striving to supplant the horse by the invention of an electric carriage, and while it has not as yet reached the point of success as desired, it has certainly come as near being successful as were the first attempts to apply steam as a propelling force.

How far these improved methods of transportation will go toward ameliorating the conditions of the "farmer of the future" I cannot say, but one thing is certain, these changes, although not directly connected with farming in its various operations, all tend to produce new conditions in other lines of business that in turn affect agriculture. In addition to the above mentioned improvements we will undoubtedly have improved methods of communication in the rural districts. The time will soon come when the farm houses will be connected by telephone, the same as in the cities at present. This will facilitate and promote greater intercommunication among the people of the country, which in turn will change the social condition of the people.

"Free mail delivery" will be the established custom in the country as well as in the cities in the future, and this will tend to increase the desire for reading and correspondence among the rural population; and the natural result will be a higher degree of intelligence and more accurate and better knowledge of public questions than now prevails among the farmers of our country. With the advent of still greater improvements in labor saving machinery in the operation of farm work, the "farmer of the future" will exercise his muscles less, and his intellect more, or in other words the farming operations of the future will require the exercise of *less muscle* and *more mind* than they now do or ever did in the past. As constant exercise strengthens the mental faculties the same as it does the physical organs, from the very nature of his employment he will be the peer in intellectual vigor and ability of his brother in other industries. Not only that, but he will be led by the necessities of his business to give more time to the study of plant and insect life, so that he may, by careful study and research, be enabled to promote the growth of the one and destroy the effects of the other.

I believe also that instead of having but one or two experiment farms in a state, every enterprising, energetic farmer who desires to succeed, will conduct a small experiment farm of his own. This will prove a source of value to him by enabling him to reduce his losses to the minimum, and raise his profits to the maximum amount possible from his individual resources.

But what of the price of farm lands and produce in the future? Will they continue to depreciate in value as they have done during the last decade or two, or will they advance with other improvements and increase in population? I may say in answer to that inquiry, no man can tell. If the natural laws of supply and demand were left free to operate in accordance with the legitimate laws of trade, I believe they would in many instances advance and bring better prices

than when interfered with by the introduction of artificial methods, as are now in active operation in many of our larger business centers. But then, there are other causes which will operate to keep the price of agricultural products low in the future. The vast area of western territory which has been settled up with such astonishing rapidity, with an enterprising, pushing class of ambitious citizens, in the last few years, together with the prospective transformation of a vast additional area of arid lands into farms of the most fertile character, by the process of irrigation, the wonderful impetus given to the manufacture of improved farm machinery in recent years, which in turn stimulates increased production of agricultural products, in this country alone will all be important factors in determining the prices of farm products in the future. And when we add to these, the fact that in almost *all* other agricultural countries, a new stimulus has been given the production of agricultural staples, which will compete with us in supplying the markets of the world, we cannot hope for more than temporary advances, except in the prices of special products occasioned by adverse circumstances that may disappear as quickly as they came. And as the value of real estate in the country is largely fixed by the price of the products derived from it, I cannot see any great reason for anticipating any great advance in the commercial value of the farms of the country, in the future, although where located near large cities or where some other specific circumstances affect them, the case may be different.

There are still other phases of our condition which it is possible to change for the better, and which will surely follow as natural consequences in the pathway of such material improvements as I have thus far enumerated, and one of the most important is our social conditions. That the farmers are susceptible of improvement in their social conditions is such an obvious fact that it would be superfluous in me to attempt to discuss it at this time. For, from the very nature of our work, especially in the earlier part of our history, neither time nor opportunity was given for social culture and mental improvement. Even now we note a radical change for the better in this respect.

We believe the time is not far off, when, with our improved facilities for acquiring knowledge, the farmers and their families will be equal to, or even surpass their city friends in the enjoyment and practice of social culture and genuine refinement.

Some writers who have been reared upon the farm themselves, and who have been closely identified with the business of agriculture, when writing concerning the many changes that are likely to take place, say that greater changes will take place among the rural population of the country, in their social relations in the next fifty years, than in almost any other department of farm life. They give as their reasons for such belief, that the farmers of the past have given more of their time and attention to the development of their material interests than they bestowed upon the cultivation of their social or mental qualities. However true this may have been in the past, we believe that with the facile methods of acquiring knowledge, with increased facilities for inter-communion with one another, with the advantage of cheap literature, which we now enjoy, and are likely to enjoy in still greater measure, with the establishment of "reading circles" in every neighborhood, and with "farmers' institutes" organized in at least every township, so conducted as to furnish "a feast of reason and a flow of soul," will all contribute very largely to greater enjoyment and satisfaction among the farmers of our country in the future. These things will not only be the means of stimulating to still greater mental activity the young people of the country, but they will afford them the same opportunities for acquitting literary culture, and social employment, that are now enjoyed by their city friends, without subjecting them to the temptations incident to city life.

The farmers, fifty years hence, will also take a greater interest in proper solution of the many political problems of the country, than they do now. They will be men of more decided opinions upon questions of public policy than now, and be less likely to sacrifice their own interests in order to sustain and promote the interests of their favorite political organizations. This condition of things will follow as a natural result of the higher intellectual conditions we have just described, and with this self-reliance and independence, will come a determination to think out the problems of life for themselves, knowing and believing that, "One idea known to be thine own is worth ten thousand gleaned from fields by others sown." The higher moral tone which will characterize the people then, will insure the certain and speedy solution of the "temperance question" on the side of right and good morals, and this will not only purify public morals, but will prove a blessing to the farmers in a material way, by turning the money that is daily spent in riotous dissipation, in the legitimate channels of commerce, to be spent in procuring the necessary comforts of life for the wives and children of that large class of citizens who now indulge in this most abominable practice, and the increased consumption of food and clothing which will naturally follow, will increase the demand for more agricultural products, thus proving a material as well as a moral blessing to every citizen, besides removing from the bright escutcheon of our country the darkest blot that now defaces it.

Christian civilization and enlightenment will also have advanced to such a degree that Sabbath desecration, with its long train of kindred evils, will either be suppressed entirely or so restricted as not to blunt the morals and offend the sense of every good citizen as it now does.

The great economic questions which are now perplexing the minds of our best thinkers and wisest statesmen, and upon the correct solution of which seems to depend the weal of so many of the business interests of the country, including agriculture, will then, either have been solved in a way that will be conducive to the best interests, not only of the American farmers, but of every citizen of our great American commonwealth; or else they be so far removed from partisan politics that the people will consider and study them more from a business, than a partisan standpoint, thus relieving the business interests of the country from many of the evil effects which result from the excitement and prejudice incident to the campaigns preceding each election.

My friends, I cannot continue the discussion of this subject further, however interesting it may be, and will only say in conclusion, that I have neither time nor language to give for your further consideration, a true description of the many changes that will take place in the business of agriculture in the future, as they appear to me at this time. I can only hope that I have said something that may be of interest, not only to the farmers, but to all who feel either a direct or indirect interest in the development and sustenance of the great business of agriculture in this country, and at the same time impress upon your minds the necessity of giving due heed to the farming interests, in all acts, either of business or legislation, that are likely in any way to affect the future prosperity and perpetuity of our great republic.

In view of all these facts, and that our farming interests may grow in influence and power in the future, I would say to you in the language of Longfellow:

"Let us then be up and doing,
With a heart for any fate;
Still achieving, still pursuing,
Learn to labor and to wait."

"In the world's broad field of battle,
In the bivouac of life,
Be not like dumb, driven cattle,
Be a hero in the strife."

So that when we have finished our part in the "great play of life" on the "world's broad stage of action" we can leave our business and our country in such conditions that they will prove a rich and blessed inheritance to the "*farmer of the future.*"

"MAGNIFY YOUR CALLING."

BY MRS. G. C. HOUSEKEEPER.

[Read at the Wood County Farmers' Institute, held at Bowling Green, December 30 and 31, 1895.]

No person is esteemed by others above the estimation of himself, and no calling is esteemed by others above the estimation placed upon it by its followers. And no class, calling or profession commands the respect of the world at large, unless they *themselves* first respect their calling.

This then being true, the estimation in which farming and farmers are held by those of other callings depends upon us.

We must magnify our calling. This we will not do until we feel and know that we are the peers of any in the land, and until our ranks are filled with educated, *thinking* men and women. By such, I mean not alone those graduated from our schools and colleges, but those who have in any way (it may be entirely self-taught) acquired the power of forming progressive ideas and expressing them in clear and forcible language. Such a one, if he be a moral man, is the peer of any in the land, and is fitted for any position of honor or trust to which he may be called.

I do not say that all farmers are destined to become great, or that all great men come from our homes on the farm. But I do say that farm life has greater advantages to develop those who have the spirit within them of reaching the top, than any other calling. There is just the right blending of light and shade, sunshine and shadow, rest and labor, to bring out the latent forces and develop a character fitted to withstand life's battles, and rise above the evil influences and discouragements he will meet.

Out of the forced habits of industry, early rising, disregard for fair or foul weather, heat or cold, comes the result of a rugged constitution and an independent spirit. And from a close companionship with nature and her works and laws, leisure time for study and meditation, comes a thoughtful and earnest purpose for life's work.

Compare, if you please, the life of a boy or girl whose associations are waving grain, lowing cattle, trees laden with luscious fruits, flowers filling the air with fragrance until every breath is a luxury—with the life of a boy shut up in our factories or mines, or even the offices and shops.

Which do you think gives the more vigor and refining influences to the forming of character?

Work is essential to both body and mind. The curse of children in villages and cities is too much idle time. Parents make the mistake of considering idleness as recreation, whereas *true* recreation is a change of interesting employment.

A *perfect* life requires a full development of the mental, moral, social and

physical natures. History tells us that our country homes are the most conducive to their development.

Joseph Cook says in his lecture on "Ultimate America," in speaking of the rapid growth of our cities and consequent danger to our country:

"In Massachusetts, Boston has only one-sixth of the population, while it has half the criminals of the whole state." And at another time he said: "It is true that one-fifth of our population live in the cities but four-fifths do not, and if worse comes to worse, our country boys will have to take care of them." What higher tribute could he pay to the elevating influences of country life.

The annals of history and biography show that the majority of the great men of America were country born. That the ranks of theology and literature, of jurisprudence and medicine have been largely filled with men who were farmers' sons.

The Rev. Robert Collyer once made the remark, that during his twenty years residence in Chicago, he had not known of a single man who had come prominently to the front in any pursuit, who was born and bred in a large city. The leading men in every calling had been reared in the country, away from the follies and vices and the enervating influences, which are known to exist in all large towns. Fashion reduces all young men and women to the same dull and uninteresting level. How much of a man is due to the qualities born in him and how much to early environment, no philosopher has been able to tell us. But it is impossible to conceive of a sagacious intellect like that of Lincoln, of a glorious mind like Webster, emerging from the false glitter and noisy commotion of the city. We think of Washington, the patrician sage, passing among the stately oaks of old Virginia; of Jefferson in his country seat; of John Adams tilling his farm in Massachusetts.

These men, it is true, lived in a time when there were no large cities in the United States. But later we find Lincoln and Garfield, reaching the topmost round of Fame's ladder, from the obscurity of country homes. Now comes a statement perhaps new to you. Not one American president from the first to the last, was born in a city.

Fathers and mothers, you who have worked so hard and denied yourselves so much, do not let the burdens you take upon yourselves rob you of the high destiny that awaits you. Be thankful for the privileges you enjoy.

Keep the great world with its crime and wickedness out of the sanctuary of your homes, and let the purest influences aid you in developing noble types of manhood and womanhood. Open your minds to the influences of everything that will elevate and better your condition. Remember it is not "the work that honors the man" but "the man that honors the work," and magnify your calling by bringing to it the skill of the master.

So shall the years crown you with plenty and gladness, the frost of winter rest lightly upon your heads, the evening of your lives be bright with the civilization which you have helped to develop, and the morning of resurrection radiant with the smile of Him who rewards us according to the use we have made of our opportunities.

THE FARMER'S TRUCK GARDEN.

BY J. H. PALM, LEXINGTON, OHIO.

Every farmer is supposed to have a garden of some sort, but it is not every farmer that has a truck garden of sufficient size, to supply the family with all the fresh vegetables they can use, from early summer until late into the autumn and winter months.

Observation has convinced me that there are many farmers who have large families and with more or less hired help about them a good part of the year, that give this important matter little attention, even if they think of it at all.

They do not seem to realize that their own health and that of their families would be the better with a good supply of fresh vegetables and berries.

In many families, beyond what the women are able to grow in the early season, the vegetable supply is scant indeed. In some cases, the men will plow or spade the small kitchen garden, and the women are left to do the rest.

Usually some lettuce, onions, peas, beans, radishes etc, are planted as early as circumstances will allow. The women do the most of the cultivation, and when the small amount that the garden affords is exhausted, the supply is cut off and no more follows. This is not as it should be.

The good Lord has given us many things in the vegetable kingdom that He meant we should use as a food-supply, and the genius of man has also, in many cases, greatly improved those which we originally had. If man fails to take advantage of the things placed to his hand, and so bountifully bestowed upon him by a benign providence, he is not living up to the full measure of his privileges, and is many times the loser, not only in the satisfaction afforded from their use, but as a means of better health.

Some farmers do not seem to take well to a diet composed largely of vegetables. They say they want what they call the substantial. They want meat, bread, cabbage and potatoes; and I am sorry to say that I know families that seldom see anything else on their tables.

The women feel the need of a greater variety of eatables for the table; but they cannot grow them, and it is not their place to do so even if they could. The men should, however. But perhaps they say they have no time to "putter" or bother with such things. They think it small business tending a plot of ground devoted to growing vegetables. They may have what they are pleased to call enlarged ideas of their occupation, and despise the day of small things. When the head of the house is tinctured with such notions as these, it is time that he have a little education in another channel. His better half should insist that he take a few lessons in hygiene as applied to the food supply of the home. He should be taught to know that in the truck garden can be found many a panacea for, or preventative of, many of the ills to which human flesh is heir, and that come many times, from a too free use of the more concentrated and rich foods that he is inclined to favor and insist on. He should learn that many of our best vegetables contain medicinal properties as well as nutritive value. I do not wish to be taken for a vegetarian and as opposed to the free use of a meat diet. I assure you I enjoy a juicy stake along with the vegetable; but I do insist that the two should go together; or that where meat is used freely, that vegetables should also be freely used.

You cannot any more expect to have the best of health from using a strong meat diet,—and especially if this is true in the winter months,—than you would expect to see your domestic animals thrive and do their best on a highly concentrated feed alone—for instance, corn or oil meal. Man is an animal, when it comes to his physical wants, just as much as any four footed beast. The concentrated foods must be diluted to secure the best digestion, and enable nature to assimilate properly, that which is intended to build up and renew the natural wastes of the body. The animal gets, or should get, the dilution by using the coarser feeds, such as hay, fodder, bran and sometimes straw, or cob ground with the corn.

Man gets, or should get, the dilution from a free use of vegetables in every meal he eats.

I would urge upon you then, friends, if you have not been providing your wife and daughters with a good variety, and plenty of the best vegetables to spread upon the family board, do not neglect it longer; but go to work and make preparations

for a truck garden next summer that will be the envy of your neighbors. If you have been doing your duty in this direction I will say amen to it. There is more danger, however, that the very fellows that need to be admonished in this respect, are the ones not usually found at farmers' institutes.

A few hints, however, may not be out of place, and may possibly be helpful to some who may wish to give the matter their attention.

The truck garden should be near the house; do not put it off in some odd corner, where it will be as much trouble for the women to get the vegetables from it, as it would be to do without them.

It should be as level as possible, to avoid washing of the soil, as the ground must lie bare largely through the winter months. If you cannot have it the right shape and comparatively level, near the house, you had better move off a little, but not too far.

You want rich ground to grow truck of the best quality, as the quicker the growth, the more tender the vegetables. A good clover sod treated with well rotted manure, cannot fail to give you a good start; but of course the outcome will depend largely upon yourself. A truck garden should be long and narrow; say eight rods wide and 20 rods long, this will give you an acre; not any too much, as you should include the berry patch with the truck. The object in making it long and narrow is to have long rows, so as to be able to do the most of the cultivating with horse power. A good plan is to have the end fences portable or rather the panels made to hang on posts. The panels should be made long enough to lap the rails to which the pickets are nailed, say six inches. An iron hook should be driven into the post at the right distance from the top, and from the ground, and left long enough out from the post so as to allow the ends of the upper and lower rails of the panels to drop onto the hook, lapping as we said about six inches.

The great advantage of the portable panels at the end is, that the horse can be driven out and turned around without tramping the young plants or destroying any of the vegetables; and the cultivation can be done clean to the end of the row.

The ground should be broken up deep, and, thoroughly pulverized before planting. I would plow early, all of the ground meant for vegetables, and when preparing to plant the earlier vegetables, or at different times of preparation, I would harrow, or *stir all* the ground meant for later planting. By so doing the weeds that are continually starting will be killed, and the frequent stirring will aid in pulverizing the soil.

An early planting of peas, beans, sweet corn, beets, radishes, or lettuce can be made as soon as the soil can be worked in the spring. In ten days or two weeks a second planting should be made so as to have a succession. The earlier varieties of peas, beans, and sweet corn should be planted first; though it is well to plant some of the later varieties at the same time, for example, we plant, say 100 hills, of the early, Cora sweet corn, expecting to get corn for the table from it first, but at the same time we make a planting of the Marblehead, or some intermediate variety, and also of Stowell's evergreen which is later and grows very large ears; then by making two or three plantings of Stowell's evergreen or some other good late variety, ten days apart, a good supply of that most delicious vegetable, sweet corn, can be had fresh, for a long time. The same plan can be carried out with the other vegetables, and when once the farmer enjoys a season's long run of a full supply of fresh vegetables and in variety such as it is his privilege to have, he will begin to realize the great advantage he has over his city cousin, who if he would have these things, must reach down into his pocket and pay out the hard earned cash. The farmer can have all the luxuries that the soil produces, and it need not take as much of his time from his money crop as he sometimes imagines, if he will only exercise a little forethought in arranging his truck garden in proper shape to get all the advantage possible in planting and cultivation, by having long straight rows and every-

thing planted straight and narrow in the rows, and doing the right thing at the right time, it will be comparatively an easy matter to enjoy what a beneficent providence has bestowed upon those who try to help themselves.

Every farmer should have a row, two or three rods in length, of pie plant. This should be at one side of the truck garden and should be covered over in late fall or early winter with a good coating of well rotted manure. A good bed of asparagus is another luxury, possible for every farmer. This should be covered with well rotted manure and also have a good dressing of salt. Pie plant and asparagus will come very early in the spring, and with a good supply, will last a long while and reach up to, and beyond the time when the early planted vegetables will come in.

After the earlier planting of such vegetables as we have mentioned, and as the ground becomes warmer, we plant carrots, parsnips, salsify, melons, cucumbers, squashes, turnips etc., as well as a later planting of peas, beans, radishes, beets, and anything our fancy dictates. For many years we were bothered with our melon and cucumber seeds rotting, in case a wet spell set in, and there was little sunshine to warm up the soil. We struck an idea which we found valuable, and which made it possible to plant melons and cucumbers much earlier without fear of the seeds rotting. Our plan is to take a piece of old horse blanket or other heavy cloth and double it several thicknesses, and thoroughly saturate it with boiling water, making it large enough to scatter the seeds thickly over half the surface and then turn the other half over the seeds. By putting on a board, and keeping in a warm place, they will sprout very quickly and then they can be planted where they are to grow without fear of rotting. Melon, cucumber and squash seeds are very liable to rot when planted early if the ground is cold, but when once started the trouble is over.

Of course the planting of late cabbage and tomatoes should be left until later. We leave the space for these, but when cultivating the earlier plantings, we also cultivate this space and by so doing, have few weeds to contend with among the tomato and cabbage plants later on. A German gardener gave us a little secret in starting parsnips. Parsnip seed is very slow to start and if the ground should become hard over the row the small plants have a struggle to get through. Our German friend said if a very few radish seed were scattered in the row with the parsnip seed, they come up quickly and show where the row is and the ground can be stirred up close to the row which is very essential in helping the parsnips start. This is very simple, yet we had never thought of it. While we advise the use of horse power in the truck garden, a small hand cultivator can be used to great advantage. It is very useful in opening the rows in planting. The young plants of many vegetables are very small when they make their first appearance above ground, and with the hand cultivator the ground can be worked very closely to the plants at the start, and the working between the rows left for horse power. Hand cultivators can be bought now very cheaply, and with the several attachments are almost indispensable. A very good one can be bought for about \$3.00 and if cared for, will last almost a life time.

One of God's best gifts to man is fruit, and the small fruits play a very important part, and should be found in good supply in the truck garden. They should be on one side of the garden in long rows, and in position to allow of horse culture as well as the vegetables. No trash or weeds should be allowed to accumulate among the vines or plants.

Strawberries can be planted in long rows. If several varieties are wanted, they can be planted in the same row but care must be taken to plant the perfect and imperfect blossoming varieties side by side to insure fertilization. This can perhaps be better accomplished by planting several rows, but where enough only is wanted for home use, if care is taken to plant not less than two rows side by side of bisexual and pistillate kinds, no trouble on that score will be had.

A good plot should be given to this most delicious of all fruits, and any surplus can be easily disposed of at good profit. Raspberries and blackberries should have a place, as they follow one after the other and give a succession of fruits for the table. Gooseberries and currants with a little care, give a good return in supplying the home with, not only necessities, but luxuries.

We believe if our friends on the farm would give the truck and berry garden a little more attention it would not only result in better health usually, but also add, many times, to the profits of the farm. Especially is this true where there are children old enough to help with the work. The work is light, and if encouraged, the children will many times receive a liking and training for what may become a very profitable line for them in after years.

FOUR YEARS ON A FRUIT FARM.

BY MRS. ELLA M. BINGHAM.

[Read at the North Jackson, Mahoning County, Farmers' Institute, held
December 20 and 21, 1895.]

Perhaps "Starting a Fruit Farm" would have been a better title for my paper as that is in reality what we have been doing. A little over five years ago, when we bought our farm, there were no fruit trees on it except a very old apple orchard and quite a number of the trees in that were dead. The farm was bought solely on account of its location as it is quite high and free from late frosts in the spring, and early frosts in the fall and is near school, railroad station and Post Office.

Four years ago the second of November, we moved onto the farm and began at once to plan for our orchards. A piece of new ground adjoining an old field near the house was cleared of stumps and rubbish and both enclosed in one field, and plowed ready for spring planting. The garden and berry ground were heavily manured and plowed. The next spring (1892) the trees, currant and berry plants were bought, brought home by us and "heeled in" the same day the roots being carefully covered from the wind on the way home. The next day planting was begun and pushed as rapidly as possible. The berry ground was thoroughly harrowed and the plants carefully set. The berry and currant plants were all set in rows four feet apart.

The strawberry plants, fifteen inches apart on the row (and not allowed to set many new plants, all runners being cut off until the first of July.) Currant, raspberry and blackberry plants were set three feet apart in the row. In setting the peach trees care was taken to trim off all bruised roots and to give plenty of room to those left. The peach trees were trimmed down to a straight whip and the top cut off to within thirty inches of the ground. The trees bought were quite small, some of them not much larger around than a lead pencil and it is a *fact* that some of the smallest trees are now among the best. Every spring, in March, the longest limbs are pruned back enough to make a nicely rounded top. They were cultivated as often as once a week (when the ground was not too wet) until late in the fall; then a furrow was plowed between each row to allow the surface water to drain from the trees. Twenty-five quince and over thirty cherry trees were planted the first spring; also a few pear and plum. The next spring (1893) an acre of blackberry plants were set, and raspberry plants set between a few of the peach tree rows, thus cultivating two crops at once. These have well repaid us for our trouble and expense. A row

of gooseberry and another of currant plants were added to our garden and a few more peach trees to the orchard. The summer, outside of a little farming, was spent in continuous cultivation of our trees and berry plants. We gathered our first crop of strawberries in June. The season had been favorable and they were abundant. We found a ready market near home at reasonably good prices. We always sort our berries and never offer the small ones for sale. If possible, we fill the bottom of the baskets with the largest berries and then finish filling the basket with average sized fruit.

As long as berries were to be had no meal was complete without them. In the fall the old apple orchard was thinned out leaving only the most promising trees; then plowed and the following spring ('94) set with apple and peach trees independent of the old trees. A few pear and cherry trees were set in the upper part of this orchard. As soon as the young trees begin to bear the old orchard will be cut down, leaving a young orchard in its place. In the fall of '93 a number of peach pits were spread and slightly covered with soil. The next spring the kernels were taken from those that had opened (we did not take the trouble to open any not opened by the action of the frost) and planted and the seedlings were well cultivated until the latter part of summer when they were budded. This was done in August. Last spring the seedling top was cut off and now we have over one hundred budded trees as good as nurserymen will charge eight and ten cents for. Some of the same kinds are sent out by some nurserymen as novelties at twenty-five and fifty cents each. These will be set next spring. We always plant our young orchards to sweet corn thus protecting the young trees from the hot summer sun and also shading the ground that it may the better retain moisture. We never try to market sweet corn but feed it to pigs as soon as it is in good eating condition. They eat it greedily and thrive on it better than on the field corn. They are fatted and turned off early before the prices drop. In this way we get a little money from our orchards to meet current expenses before the trees are in bearing. The fall of '94 we had several bushels of one variety of peaches from our first setting in '92. Last spring the trees were heavily set with fruit buds but had been killed by the severe freezing during the winter. In addition to the trees bought of nurserymen we take up all the seedlings that grow in the fields and graft them to varieties known to be desirable. So far as our fruit has borne it has all been true to name with the exception of a couple of currant bushes. We have eighty, three year old currant bushes and eighty, two year old bushes and the last season in spite of frost we picked nearly eight bushels of currants for which we found ready sale at satisfactory prices. In fruit growing as in everything else it takes patience and care. A little carelessness with a harrow or cultivator will make havoc of plants or trees in a very short time. When it is very dry, it is a good plan to mulch trees with grass or straw and water them. We do this only with the choicer varieties. We never set either trees or plants in the fall, neither do we buy novelties except in a small way for trial and never of an agent. We have only been in the business of fruit growing four years, but we feel encouraged by our success and the kind words of those who feel an interest in our work and think it will not be long until we will be greatly rewarded for our labor. Some advise every person to plant small fruit. That advice is very well if there is plenty of help to care for it but if it is neglected, as is the case nine times out of ten, the money expended for the plants will buy more berries than will ever be gathered from them. It is a business of itself and needs the attention of the grower just when the farmer's corn, potatoes and grass need his care. If you have the taste for the work and the time to do it *right*, we say, by all means plant small fruits; but if not, it will be far better to put extra care on your farm crops and buy of a professional grower than to try to do both and fail.

SUCCESSFUL FRUIT CULTURE.

By J. W. SMITH.

[Read at the Farmers' Institute held at Chester Hill, Morgan County, December 16 and 17, 1895.]

The essentials for successful fruit culture are a good soil, thorough cultivation and proper selection of varieties. While we can not always have just the soil we wish, we should be careful to plant on the best we can secure.

Select high ground, as fertile as possible, preferably with a northern or eastern exposure.

If everything else is to be sacrificed to early maturity, plant on a southern slope, but as a rule it will not pay except with berries etc., which do not bloom soon enough to be caught by the late spring frosts. It matters but little, except the difference in the labor of setting the trees, whether the ground has been under cultivation the previous year or whether it has been in sod. While probably the majority of orchardists favor land previously cultivated, I should prefer a clover sod turned under and well cut up; with this we can cultivate after the orchard is planted for a number of years before resodding. Before setting the trees the ground should be put in as fine and mellow a condition as possible. As to the best size trees to plant there is some difference of opinion. Most planters make the mistake of wanting their trees too large; they buy as if they were buying cordwood and want all the timber possible for the money. As a rule it will be found that a medium sized tree will give the best satisfaction. A small or medium tree will have more roots than a large one and consequently will not get such a set back in transplanting.

There are three things in this world that the average man imagines he can do just a little better than anyone else, the first is to build a fire, the second to run a newspaper and the third to plant a tree. Now I do not think that I can tell you the perfect way of planting a tree, because there are so many things to be taken into consideration, such as the variety, size and condition of tree; kind and condition of soil; season, moisture etc.; but I will give a few simple directions which are generally conceded to be correct and with which I have had excellent success, having lost, out of an orchard of over eleven hundred plum trees planted last spring not quite 1% while the year before I planted two hundred pears and did not lose a single one.

The first requisite is to properly trim out the top of the tree; how much of this should be cut off depends upon the amount of root the tree has and the variety of tree. A safe rule to follow is to cut out the *entire top*, especially of peach, plum and cherry. Of apple and pear with good roots, probably cutting out one-half the top will be sufficient. But more trees are lost by neglecting to cut out the top than from any other cause.

The holes to receive the trees should be dug large enough to admit the roots in their natural position. Never bend a root; dig the hole larger or cut the root off.

Where the larger roots have been mangled in digging they should be cut off with a sharp knife. Always sloping the cut upward; this to make the roots start downward and grow deeper in the soil, that the tree may the better resist drouth. In filling in the holes always use loose soil from near the top of the ground, taking care to work it in all around the roots, leaving no open spaces for air or water. When the roots are all well covered, tramp the dirt around as firmly as if you were setting a fence post. Don't be afraid of hurting the roots, if they are well covered they will not be injured. Mound up the dirt around the tree five or six inches higher than the surface of the ground. Under no consideration put manure next the roots of the

tree. Apply it on or near the surface of the ground and don't be afraid of putting on too much. In setting the tree make it lean to the south-west or in the direction of the prevailing winds, these will straighten it in a few years. Plant about two inches deeper than the tree originally stood in the nursery, except dwarf pears which should be planted five or six inches above the bud.

Now having our orchard well planted, the next requisite is to cultivate thoroughly, not for one year only, but for four, five or six years if we wish to obtain the best results.

All grain crops in the orchard except corn, should be avoided. Wheat and oats are the worst crops that can be sown, especially oats as they stand on the ground longer and pump out the moisture at a time when it can not be spared. Corn, potatoes, beans, vegetables, or in fact any crop which will keep the orchard cultivated will be all right. Above all things don't sod down to weeds. After you have kept the ground under cultivation as long as possible sow to clover or some other leguminous plant or plow under. A boon to orchardists will be crimson clover and southern cow peas, if they will succeed with us and I believe they will. As an experiment, the past season I sowed about an acre of cow peas, and notwithstanding the drouth they completely covered the ground, while their root system was a wonder to behold. I also have three or four acres of crimson clover sowed this fall which so far has made a fine growth. Whether it is hardy enough to endure our winters is a question not yet decided, but I see good reports from it as far north as northern Ohio and southern Michigan. Where this will succeed it can be sown in the fall after the period of cultivation has ended, and will mature early enough in the spring to be plowed under before time to begin cultivating. Both experiment and analysis have proven that for a nitrogen trap this has few, if any, equals, this and the cow pea are both worthy an extensive trial by either the farmer or orchardist.

As to what kind of fruit to plant for the most profit, we will not attempt at present to say.

As to varieties, too much care can not be taken. Look at the apple orchards over the county and see how many of them have the proper proportion of summer fall and winter varieties.

With all the money that has been brought into Morgan county by the past season's apple crop, I venture the assertion that all the apples sold have been grown on one quarter of the trees. There are many summer and fall apples, too many unsalable winter varieties. In regard to marketing, the large grower will always have the advantage. The man with a few bushels of fruit will always be at the mercy of the middle man, while the man with the large orchard can ship his own fruit to market, or sell on the tree.

Is fruit culture profitable? We answer without hesitation yes, if one will give the same attention to it that he does to any other business.

If trees are planted in sod and given no care or attention you can not reasonably expect them to make you any money, but if you will go at it with a determination to succeed I know of no branch of farming that offers as good an inducement as fruit growing does.

J. H. Hale the world renowned orchardist of Connecticut and Georgia in speaking of his fruit farm in Connecticut which, by the way, has been in possession of his family for over two hundred and fifty years, says: "We have found more dollars from these worn out acres with fruit than our ancestors, with toilsome general farming obtained cents.

Indeed the annual products now average double the salable value of the farm itself."

The highest success in any business is attained by simply taking advantage of the adaptability of surroundings. The farmers of the west have been quick

to see that their vast level prairies are adapted to the raising of grain and with the advantage given them by the use of the improved machinery, which we can not successfully operate on our steep hillsides, we can not hope to compete with them in this line of agriculture. On the Pacific coast fortunes have been made in fruit raising, although situated thousands of miles from market. Now in Ohio there are but two natural fruit belts. One on the shores of Lake Erie and the other the hills of the southern part of the state. The Lake shore has long been famous for its vineyards and orchards, but the southern region is just beginning to awaken to its real destiny. *These high hills are among the best fruit lands east of the Rocky mountains.*

Aside from the revenue received, there is *such* a satisfaction in having all the fruit one wants to eat. In the health saved and in the added pleasure of living it will pay for itself many times over, and besides you will have more friends; especially when your fruit is ripe. All your neighbors will drop in just for a little chat, you know, and your city cousins will not fail to pay you that long promised visit.

There is also a pleasure and fascination in Horticulture to be found in no other branch of farming; it takes you away from the cruder elements of nature and leads you into an ever-increasing wonderland, where chapter after chapter of Nature's Serial Story is given for your perusal; and deaf must be the ear and blind the eye which will not hear or read this story, more wonderful than any ever penned by human hand. As Longfellow says: "We may not be able to explain it, but we doubt not that there is some connection between living soulful human beings and living trees and flowers, the choicest products of mother nature; and with the right feeling existing between the two there comes a better growth and fruitfulness than when no such feeling exists."

"In all places then and in all seasons,
Flowers expand their light and soul like wings,
Teaching us by most persuasive reasons,
How akin they are to human things."

If then you can not or do not care to engage in Horticulture on an extensive scale, plant enough trees and berries for your own use. And do not forget the flowers. They too will amply repay you for all the time and labor bestowed on them.

"Then make your homes beautiful,
Adorn them with fruits and with flowers;
Plant them around you to bud and to bloom,
They will give life to your loneliest hours,
And also bring light to enliven your gloom.
Then shall it be when after on life's billows,
Wherever your tempest tossed children are flung,
They'll long for the shades of the home weeping willows;
And sing the sweet song their mother had sung."

FRUIT FARMING A DEPENDENCE.

BY J. H. DAWSON, MT. HOLLY, O.

[Read at the Independent Farmers' Institute, Williamsburg, O., Jan. 31 and Feb. 1, 1906.]

This is a subject that is attracting more attention in this county at the present time, than it has at any other period in its history. A great deal of our hill and upland have become so impoverished in fertility, that the growing of corn, wheat and potatoes and the ordinary crops of profit in former years, have ceased to yield a revenue sufficient to meet the demands of the times. The great transportation facilities of the country have brought us into sharp competition with the western grain grower and stock raiser, and we find we are not able to compete with them in this line of farming.

Then the question confronts us, what shall we grow on our farms that will be profitable? I answer by saying fruit.

The word dependence in my subject, means, to depend on fruit as the source of revenue or money supply. I think it bad economy for a farmer to buy that to live on, which he can raise on the farm. He ought to raise enough to feed the necessary stock and furnish bread, meat and potatoes for his family, and I will endeavor to treat the subject from that standpoint.

Fruit farming is not a science that we may learn and apply to all cases. Every farm has its individual requirements, peculiar to itself, and yet there are certain rules and conditions which all must observe if they succeed, and which we will notice further on.

I have been requested to give an outline of the essential qualifications and conditions to make fruit farming successful. I shall not deal with theory but practice, for I learned long ago that theory and practice were two different things in fruit culture.

Among the necessary qualifications is a clear head, a willing hand and a determination to win. It is pluck and good judgment, and not luck that makes success. We often hear the remark made that Mr. so and so has been very lucky or some other person has been very unlucky, but I want to say that I believe we make our own luck to a great extent.

The conditions necessary to success are favorable climate, location, soil and market. We must plant the kinds of fruit that will thrive in our climate, for instance we find that the variety of apples that are the most profitable in New York are not the most profitable here, and the same thing with some other kinds of fruit.

Therefore it is all important to know what thrives best here, and plant that only. Don't fool away time and money by planting that which does not yield heavily simply because it sells high in market. We have hundreds of trees set in this county that never bore fruit enough to pay for the ground they occupy, for the reason the climate, soil or location did not suit them.

As to location we shall only be able to speak in a general way, for we find from experience that the different kinds and varieties have their own peculiar choice of location and exposure. But generally speaking, high lying land is the best. It is necessary to be in easy reach of market or shipping point so that the fruit can be handled with the least possible expense. I will be brief on this point by saying that the hill and upland of Clermont County is admirably adapted to fruit culture, but the bottom land is better adapted to other kinds of farming. Fruit of no kind does well on bottom land.

Now the next question that presents itself, is what kind of fruit shall we grow? Well, there are many kinds that do well here. The-

apple, peach, pear, plum, cherry, and of the vine, or small fruits, the strawberry, blackberry, dewberry, currant, gooseberry and grape. Now it would not do for one person to undertake to grow all of these extensively, because he would be getting too many irons in the fire, and would not be able to give that degree of care to each kind that would secure the best results. The most successful fruit growers of our country have been men that have had only a few kinds.

It is very necessary to use great care and judgment in selecting varieties. In setting an apple orchard for market, I would set only one or two varieties and of the varieties that do well here. There is no profit in setting an apple, no matter how fine it is, or how well it may sell, if it is not a sure bearer. The object in setting one or two varieties is an inducement to buyers. A buyer will pay more per barrel, for one thousand barrels of one variety in an orchard, than he would if there were fifteen or twenty varieties (as is the case with the most of the orchards in our county.) A good buyer will not go into a little mixed up orchard to buy.

In setting pears it is much the same as with the apple. But with plums and cherries it is different. I would set more varieties. And of peaches I want my orchard, divided so that the first will ripen the fore part of July, and then one variety after another until frost. Peaches are a perishable fruit and must be handled when ripe, otherwise there is a loss.

In setting small fruits there is such an endless chain of varieties, and so many that are entirely worthless, that it stands the grower in hand to go a little slow about setting for a crop of some variety that he knows nothing about, only what he saw on paper or read about in some catalogue. Such statements I have found to be very misleading. It is all right to try new varieties, for in so doing we may get something better than we have, but it is always safe to test them on a small scale before setting for a crop. Strawberries, currants and gooseberries can be grown to advantage among small fruit trees.

Now the next question we wish to look at is that of cultivation, without which all fruit culture is a failure. We have known orchards set out in good shape, and that had the dirt piled up around the trees with the plow for a year or two and then left to take care of themselves, and grow up in grass and used for pastures and so on; and when the trees were old enough to have borne heavy crops of fruit, half the trees were dead, and the balance little scrubby things. Then we hear the owner grumbling about hard times and telling his neighbors there is nothing in fruit, (no wonder). Cultivation should begin before the trees are set out and be kept up until they are in bearing. A good plan is to farm the ground in corn the first two or three years. Not with the object of getting a good crop of corn, but for the benefit of the trees as the corn affords a good protection from the sun during the hot months. Then sow clover one year.

Great care should be given to trimming when young, so that the trees will be headed upright after the top is well started and shaped up properly. The best time to trim, according to my experience, is when the tender shoots can be rubbed off with the hand, and if this is done at the right time, there will be but little use for the pruning knife. When a large limb is cut from a tree decay is sure to set in before the wound can heal, and the tree is injured thereby. Better keep out all surplus limbs as aforesaid. Every fruit grower should have a sprayer. With the multitude of insects we have to contend against, it is impossible to obtain that degree of success necessary, without the sprayer. Now the question comes to the cautious man, will it pay to give up to other kinds of farming and go into fruit farming. I unhesitatingly say yes. Let us look for a moment at what we may reasonably expect from a fruit farm of the first grade (and anyone with pluck and energy can have one of that kind if he has any at all). We will take a farm of fifty acres. We will commence by putting out one thousand apple trees which

will occupy twenty acres. Then we will set five hundred pear, five hundred peach, two hundred plum and two hundred cherry, which will take twelve acres more, making in all thirty-two acres, leaving eighteen acres for other crops.

Now in five or six years we will be getting some fruit, and of the finest quality, and when the trees are ten years old they will be yielding a handsome profit. I have prepared a table showing what can be expected when in full bearing.

Apple, 1,000 trees, 3,000 barrels @ \$1.00 per barrel.....	\$3,000 00
Pear, 500 trees, 700 barrels @ \$1.00 per barrel.....	700 00
Plum, 200 trees, 300 bushels @ \$2.00 per bushel.....	600 00
Cherries, 200 trees, 400 bushels @ \$2.00 per bushel.....	800 00
<hr/>	
Total receipts	\$5,100 00
Expenses	1,930 00
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Net proceeds	3,170 00
For barrels, picking and packing, 3,000 barrels apples.....	\$1,000 00
For barrels, picking and packing, 700 barrels pears.....	230 00
For packages, picking and handling, 300 bushels plums.....	300 00
For packages, picking and handling, 400 bushels cherries.....	400 00
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Total expenses	\$1,930 00

These expenses will cover the cost on that much fruit any year, and often the fruit will bring twice the price of this estimate. I have not counted the five hundred peach trees in this estimate. Peaches are not a very sure crop here, but when they do hit there is nothing that pays better. If we can get one good crop it will pay well for the trouble and expense, but we may get several crops.

Now there are other ways in which fruit farming pays, and one is in increase of value of land. Every acre of land set in orchard of good fruit when it comes into bearing is worth one hundred dollars and will pay big interest on the investment.

But, says the novice, we are going to overstock the market. Well, that has been the cry for more than half a century and we are farther from it now than we were then. These people fail to realize what a big world we live in, and that there is only a small portion of it where fruit can be grown to profit. The consumption of fruit is increasing all the time. It is only in recent years that we have shipped fruit to Europe, and now there are thousands of barrels shipped annually across the water.

The trouble with us in Clermont County is that we are not setting enough fruit. We are not growing fruit enough to give us a reputation in the market. If every upland farm in the county had from two thousand to five thousand or more fruit trees it would give us a reputation in the fruit market, and the result would be that we would have buyers right at home.

Now we have to hunt a market for our fruit, then the market would hunt us, and we would get better prices than we do now. Any thing always brings a better price when the buyer hunts the article, than it does when the article hunts the buyer.

But says the novice again, fruit does not bear every year. Neither does anything else hit every year. All things fail at times, but nobody can stand a failure better than the fruit grower. That is one of the reasons we are not afraid of overstocking the market.

Fruit never hits in all sections of the country the same year. We don't need a crop every year. We don't want a crop every year. The trees need rest in order that they may live longer and bear better fruit.

In conclusion, fellow farmers, I will say that I am fully persuaded in my own mind that this is the solution to the mortgage question, and also to the question how shall we keep the boys on the farm. The reason so many boys want to leave the farm is on account of the hard work and poor pay. They want to get out where they can make more money. Our boys, as a rule, are bright, and they know a good thing when they see it, and when they see the old farm blossom as the rose, and the trees bending with luscious fruit, the receipts far exceeding the expenses, the mortgage lifted, and the surroundings of home made pleasant, they will not be in any hurry to rush off to the city where they will have so many temptations to lead them astray.

Fruit growing, to my mind is one of the most delightful and healthful occupations in which one can engage. The work is done during the summer months, and when the chilly blasts of winter come the grower can sit by his fire-side and cultivate his mind by reading such books and papers as will help him to a better and more useful life.

VEGETABLES AND SMALL FRUITS.

BY C. C. MUHLBACH.

[Read at the Farmers' Institute, held at Hillsboro, O., Feb. 19 and 20, 1896.]

Mr. President, Ladies and Gentlemen:

In the preparation of this paper I hardly knew what to offer to this Farmers' Institute, as my business does not run in quite the same direction as the farmer's, although we are both tillers of the soil. But, as I have been requested by your President and Secretary to read a paper or deliver an address before this Institute, with the privilege of selecting my own subject, I have taken it for granted that they expected something in my line of business. Therefore, I have chosen for my subject, "Vegetables and Small Fruits." You will note the fact that I have given myself a large territory to range over. I shall not, however, attempt to give you any fine spun theories, scientific terms, or anything else but plain, practical, everyday experience, that has come under my own observation. With this understanding, I shall proceed to give you such as I have. I suppose the first thing in order would be to find what men are best fitted for the business of gardening. Some people have a peculiar notion that anybody that is broken down in health or with old age is just in the right condition to follow gardening. This may be true if you are going to garden for pleasure, but, on the contrary, if you are going to garden for profit, you would better be informed before you engage in the enterprise, that you must expect to be diligent, persevering and not afraid to be exposed in all kinds of weather, as the gardener is obliged sometimes to set plants or go to market in a drenching rain. We, that have had experience, know the importance of meeting our engagements with our customers and cannot afford to disappoint them on account of rain. Then there is another important point, and it is very important; it is this, that you must be a good salesman, for, what profit would you reap if you did not dispose of your crop at good advantage? You must not lose sight of the fact that the gardeners' and small fruit growers' crops are perishable; hence, the importance of a good salesman. Many times have I gone to market in the rain and been obliged to stay out in it and drive over town and unload in the rain.

The gardener is also expected to work from twelve to sixteen hours per day. You must also have some knowledge of the business outside of book and newspaper gardening, for if you are obliged to hire your gardener and pay him for his experience, at the end of twelve months you will have the experience to know that the gardener has received all of the profit. If you cannot comply with the above suggestions, you would better not engage in the business of gardening for profit. I imagine I hear some one say, "Oh! he is a gardener and small fruit grower and is placing these obstacles before the uninformed in order to keep them from engaging in the business." I have not told you one-half that we have to contend with, and my gardener friends will bear me out in what I have said, if any are present.

First.—In selecting soil for growing vegetables, I would prefer, for early crops, dark, sandy loam, such as we find usually on what we call the creek bottoms. We have some crops that require only moderately rich soil, but generally speaking, if you expect to raise first class vegetables, you must have your ground in a high state of cultivation. I suppose you are aware of the fact that it is possible for the gardener to receive from one acre, from nothing to five hundred dollars. You may think this is unreasonable, but to obtain results like this, that is five hundred dollars per acre, we must be at great expense in the way of manure and labor and manner of cropping. I have about three-fourths of an acre in one bed, from which I have been for the last four years taking from two to four crops during the season.

I shall now proceed to tell you how we must prepare the ground in order to obtain these results. The first thing to do is to cover the ground thoroughly with well-rotted manure, if obtainable, if not, take the next best you can get, scatter as you haul it, (this applies to winter hauling, of course). Now then, as soon as the ground is in condition to plough in early spring, turn this manure under, then top dress with well-rotted manure from ten to fifty tons per acre. Now, you are ready for the harrow and the drag or crusher. I shall not say how often you would better go over this with the harrow and drag, but keep on harrowing and dragging until every clod is well pulverized, then you will be ready to begin planting.

The first thing with us in the open ground is the planting of peas. As the ground is in order for the seed, we draw a garden line full length of the lot, or mark the rows with a Planet Junior drill, that we may have straight rows. You will see the importance of straight rows in the garden before we are through with this subject. I use the double-row system, that is to have two rows about eight or ten inches apart, and then the next two rows six feet from these. As soon as the peas begin to make their appearance, rake the crust off with a fine steel tooth rake, then follow with the horse cultivator. The cultivating can be done in time to be ready to prepare for the next crop, which is musk-melons. Take a large single shovel and a horse and draw deep furrows between the six-foot rows. Lay off your hills six feet apart, then put a shovel full of well-rotted manure in each hill. In about two weeks, I set tomatoes between the melon hills. A short time after this, the pea vines are ready to come off the ground: these I pull and wrap around the tomato stalks close to the ground to serve as a mulch. I have also taken a crop of green beans from the ground occupied by the peas the same season, making four crops in all. Do you marvel when I say that this three-fourths of an acre yielded:

Sixty-five bushels of peas, averaging \$1.00 per bushel.....	\$65 00
Melons	170 00
Tomatoes	25 00
Beans	15 00

Total\$275 00

Of course, we do not always receive such returns, but the possibilities are even greater than I have stated.

As we have given you the ground work for operation, in planting we must use our judgment in regard to what seeds are to be planted early and what to be planted later. We cannot do as you farmers often do, that is to have a successful neighbor farmer for a pattern or guide, as gardeners are not so common as farmers and if they were they would be slow to tell a rival how to obtain a crop earlier than their own, for herein lies our success. As you know, the early vegetables and fruits command the highest prices; hence, the importance of knowing when and how to plant.

It will be necessary to divide our garden seeds into two classes, temperate and sub-tropical plants, classified as follows: Early, which can be sown from the middle of March to the last of April, beets, carrots, cabbage, celery, lettuce, parsnips, onions, peas, radishes, turnips and spinach. Late, are those that can be sown from the middle of May to the middle of June, lima beans, bush beans, pole beans, sweet corn, musk-melons, water-melons, tomatoes and cucumbers. We must be very careful in the selection of our seeds, therefore, we cannot afford to buy of any cheap, unreliable seedsman, for those of us who have had experience in this line know what this means. We must also learn what our market demands, for without this knowledge we might have our garden full of something we could not dispose of at any price. I hardly think it necessary to go into an elaborate description and manner of cultivation of vegetables such as our market demands, to the farmers of this county, as we are limited to only a few varieties, such as cabbage, peas, beans, corn, cucumbers, melons, tomatoes, onions, asparagus, radishes pie-plant and sweet potatoes.

As I have indicated in this paper some of the possibilities of gardening, we must bear in mind the fact that these results cannot be obtained by a careless and hap-hazard gardener. We must apply ourselves strictly to business, give thorough cultivation, place our goods on the market at the proper time and in a nice attractive package or bunch, as the case may be.

Before leaving this subject we would like to pay our respects to the farmer in a few words.

Suppose you were forced to farm as the gardener is required to garden in order to obtain a profit. Take a trip over this county with me and see the hundreds of acres of land going to waste; field after field grown up in weeds, bushes and briars, or see a field of corn or wheat so encircled by a hedge of briars and bushes that you can scarcely see the fence. Notice how careful this farmer is about saving manure; he is so extremely careful in this respect, that he will feed his cattle in the woods or on some hill-side at the foot of which is a stream of water to carry off the nasty filth and refuse from his cattle. Do you wonder that this farmer complains of hard times, when he is running the cream of his farm into the creek? Do you think the gardener or farmer can be successful by this kind of management? Show me a garden that is full of weeds and improperly cared for and I will show you a gardener that has made a failure.

Now to my second subject,

SMALL FRUITS.

In treating on this subject I shall not attempt to say anything only on what I have had actual experience. When I say small fruits, I mean strawberries, raspberries, blackberries, dewberries, gooseberries and currants. We will say right here that any ordinary farm land or garden lot will grow the above named fruits and I know of no reason why the farmer should not have a full list of these for his own family use. When he neglects to cultivate these fruits he is missing the

very luxuries of life that are just within his grasp, and they are also conducive to good health. Notice your city and town cousins who will buy berries and fruits and, sometimes at what we term fancy prices, rather than buy a beefsteak. But the majority of our farmers say by their actions, "Oh! what do berries amount to in the way of keeping a man strong and active?" If you will use more fruits and vegetables in your families and less meats, I will promise you this, that you will not have so much use for the doctor, (I hope there are no doctors present as this is intruding upon their territory). We will be warranted in saying this, that if you do not raise your fruits you will not buy them; of course this will not apply to all, but to the majority of the farmers. They think to buy berries and pay from twenty-five cents to eighty cents per gallon is worse than extravagance and say they cannot and will not pay such prices. The result is they do not have any berries for the cold winter day dessert, which the appetite craves and the system demands.

Now then to place these fruits within your reach that your families may enjoy them, you must help yourselves by getting a supply of plants and roots from some reliable grower. You will do well to remember this when you come to make your purchase of your stock of plants, as I suppose you are well aware of the fact that we have rascals in the fruit-tree business as well as in the other trades. We admit that the honorable fruit-tree agent is a blessing to humanity and a benefactor to mankind, as he will induce quite a number of persons to plant fruits who would not, unless being persuaded, or, as we say, talked into it. But on the contrary, the unscrupulous rascal of an agent will not hesitate to unload upon you any kind of a seedling or wild stock he can lay his hands upon, and that at fabulous prices. So you see the importance of dealing with reliable men. But if you can obtain these plants of a neighbor or a near-by grower, do so by all means, for if they prove not true to name and what they have been recommended, you can go to him and have him make good the loss, for you may never see the oily-tongued stranger again. So I will repeat, be careful of whom you obtain your plants.

Now let us turn our attention to the strawberry first, as it is the first to come into market. It will be necessary to divide the strawberry into two classes, as follows: perfect and imperfect blooming varieties. Right here is where the uninformed will be deceived by the tree agent, and sometimes unknowingly upon the agent's part, as he is often not informed upon this subject. But don't be afraid of the imperfect blooming varieties, for they are the most productive plants we have, by mixing them with perfect bloomers or fertile varieties. The strawberry plant is the best natured plant we have, as it will grow and give a fair crop with very little labor on our part.

The first thing in order will be the preparation of the ground for setting the plants, which should be done in April or early in May. We plough the ground the same as for corn, then harrow and drag until the soil is well pulverized and level. After this is done and the weather is favorable, we proceed to set the plants. I use a line for this or run by stakes in order to have the rows straight. I would prefer setting just before a rain. But if you should fail to have this favorable condition, then place your plants in a bucket about half full of water and set them with the roots dripping wet. We usually use a spade. This will require two hands to do speedy work. A boy twelve or fourteen years old will carry and insert the plants in the opening made with the spade. Care must be taken not to place the plant too deep into the ground. Setting the crown of the plant below the level of the surface is just about as injurious to the plant as too shallow setting. When the boy has placed the plants in position, being careful to spread the roots nicely, then the one using the spade places his foot against the small mound made by the spade and presses the soil firmly around the plant. This is for field planting,

as we call it. We use the matted row system, setting the plants two by four feet. In about a week or ten days the plants will be ready to cultivate; this is done with a five-tooth horse cultivator. Continue this all summer as the case may need, from one week to ten days apart, going the same way after they have begun to vine. If you will do this and take the varieties below named, you will be well repaid for your labor expended. I shall not give a long list so that you will not need be at a loss to know what variety to select. The first named are perfect bloomers, as follows: Wilson, Jessie and Michael's Early, imperfect varieties, that will not produce by themselves, these may be set as follows: Two rows imperfect and one row perfect bloomers, as the imperfect bloomers are the greatest yielders by this treatment. Now then, let us present some of the second-class or imperfect bloomers: Crescent, Bubach No. 5 and Haverland. I would recommend the Wilson and Crescent once and for all, for our locality. They have produced the best crops for me of any I have tried. These two old, well-tried varieties have yielded on my place at the rate of six hundred and ninety dollars per acre.

RASPBERRIES AND VARIETIES.

Black, Doolittle, Ohio and Gregg, Red, Cuthbert or Queen of the Market.

I would recommend the setting of these plants in the spring of the year. Prepare the ground about the same as for strawberries. Lay your ground off with a single-shovel, four by six feet, place the sets in this furrow, then firm the dirt around the roots, taking care not to press the dirt upon the germ of the plant. Cultivate the same as strawberries, until about the middle of August. We hold to the staking plan, while some would prefer the matted or hedge-row system. If you prefer the hedge-row system, it will be necessary for you to pinch out the terminal bud, when fifteen or twenty inches high, in order to form a tree-like stalk. This is practiced also where the stakes are used in order to induce the plant to put out laterals, giving more fruit-bearing wood and more plants beside. This applies to the black cap varieties only. As nearly all red varieties propagate from the root or sucker, the pinching process with the red varieties, the Cuthbert in particular, is harmful rather than beneficial. Therefore let them grow at will until the next spring, then cut back to about three feet high. Do not neglect to prune the black caps at this time. Cut the laterals back to eight or ten inches long. Clear the brush off the ground and burn it, then cultivate until the berries begin to form. After the crop has come off, cut out the old canes and burn them, that you may destroy any insects that may be in the old cane, then retie and cultivate as before. You must use judgment and not cultivate too late in the season, as this will induce a late fall growth that will winter kill. We receive from one to three quarts of berries per stake. An acre set four by six feet will contain about seven-teen hundred plants; they will average about eight cents per quart, making about twelve cents per stake, or about two hundred dollars per acre.

GOOSEBERRIES AND CURRANTS AND VARIETIES.

Gooseberries: Houghton, Downing and Smith's Improved.

Currants: Red Dutch and Fay's Prolific. These fruits should be set in the fall of the year, as they put out their leaves very early in the season; sometimes they are in full leaf before the ground is in a condition to be worked, hence the importance of fall setting.

Prepare the ground the same as for raspberries, only go deeper; lay off your ground four by six feet; then take a spade or shovel and dig your holes about eighteen inches square. When the holes are dug proceed to set the plants by first filling in with the top soil until the plant stands in the ground about as deep as it

did in the nursery, firm the dirt with the feet around the plant. These plants, like the rest of our small fruits, will respond liberally to generous treatment. Give thorough cultivation, manure, ashes and common salt, and they will repay you for your trouble. We have here the same number of plants per acre as the raspberry, to-wit: about seventeen hundred plants. The gooseberry has yielded with me from one to ten quarts per bush. We will place the average yield at four quarts per bush. Last season I sold my entire crop wholesale at thirty-two and forty cents per gallon. We will take eight cents per quart for the average and see what we have per acre. Seventeen hundred hills, four quarts per hill, at eight cents per quart makes thirty-two cents per bush, or about five hundred dollars per acre.

Currants will not yield so large a crop. Take the average of two quarts per bush at eight cents per quart, making sixteen cents per bush, or about two hundred and fifty dollars per acre.

BLACKBERRIES AND VARIETIES.

Snyder, Ohmer and Minnewaska. Blackberries require about the same treatment as the raspberry in the way of cultivation. There is this difference, however, in the selection of the soil, we use our poorest soil for this berry and we are satisfied that we receive better returns from this clay soil than our rich garden lot, as the rich soil has the tendency to produce wood and not fruit. We grow this berry on the hedge-row system, and it will be rather a difficult matter to make the calculation by the hill, so I will place the figures from fifty to three hundred dollars per acre.

DEWBERRIES—THE LUCRETIA.

Here is a berry I am not very well acquainted with. I have not had the pleasure to have it fruit for me, although I am well pleased with the appearance of the vines. They made a wonderful growth with me in spite of the drouth last season, vines six to eight feet long.

Now, then, in conclusion, we must not allow the above figures to mislead us. While I have endeavored to place the figures at a reasonable estimate, they may appear to you very unreasonable, but to those having had experience, they would appear very reasonable. Even such results as I have given require the best of treatment, as manure, cultivation and pruning. And you will agree, no doubt, with me that anything worth doing at all is worth doing well. Then if we are going to farm, let us farm for all there is in it, or if we are going to follow gardening as a business, let us garden to the best of our ability, or if we expect to make a success of small fruit growing, let us apply ourselves to the business. If you think you are not well enough informed on the above subjects, attend these farmers' institutes, as you will get some valuable hints that will be worth dollars to you, for this is what we are all after. Or, if you cannot attend the institute, you can inform yourselves by subscribing for some paper or journal that is interested in your occupation. You will find these helps, when added to your own knowledge, very profitable to you. Let us not have it said that there are any Farm Journal-Peter Tumbledown, farmers, gardeners or small fruit growers in Highland county.

THE GRAPE.

BY W. H. TAGLEY.

[Read at the Clermont County Farmers' Institute, held at Batavia, February 26 and 27, 1896.]

The grape is one of the most highly-prized as well as one of the most wholesome fruits, and is adapted in some of its varieties to nearly all parts of the country, and with care and attention may be successfully grown on every farm and in every garden. The history of the grape begins with man's history. Among the fruits of the world it bears the palm of antiquity in company with the fig. It is hoary with age. All tribes and nations, ancient and modern, have recognized its value, both as meat and as drink, for sustenance as well as for exhilaration.

The grape is indigenous to the temperate zone of the world. In its stages of improvement from its natural state to its present condition, it has undergone but little structural change; the quality of the fruit has been greatly improved by scientific experimentation and principally by the survival of the fittest, and the habit of the vine has been domesticated, and restrained from running wild. Botanists recognize four American species of the genus *vitis*, bearing edible fruit. They are, *Vitis la brusca*, the northern fox grape; *Vitis aestivalis*, the summer grape; *Vitis cordifolia*, the frost grape, and *Vitis vulpina*, the southern fox grape or Muscadine. European varieties are all designated under the title *Vitis vinifera*. From these several species all of our present varieties have originated. The grape is propagated from the slip or cutting, by layering and by grafting. New varieties are produced from the seed. The attention of the American colonists was early attracted to the cultivation of the grape, principally for wine-making purposes. They brought over and planted from time to time European varieties which always failed, and to this day cannot be grown in the open air in any part of the country except the Pacific coast, where they seem perfectly at home. The pious monks who first settled there as missionaries brought with them their native thirst from the sunny fields of Spain, and longed to quench it in California. A ship which brought regular supplies to these monks had on board some fine raisins; the seeds of these were planted, the vines grew and bore superb grapes, and these grapes, first called Los Angeles, afterward Mission grapes, were the only ones grown then, until the settlement of that country by the Americans. Now three hundred to four hundred varieties grow and succeed well there. The native grape of the Pacific coast differs greatly from the native grape of the Atlantic coast. The difference is attributed mainly to climatic influence. The great state of California, with its wonderful climate and its extensive, intelligent viticulture, produces grapes and wine enough to supply the demands of the entire country. The grape in this section is not subject to insect pests to any appreciable extent, if we except the depredations of the honey bee and its *particeps criminis*, the red wasp. It has frequently occurred to me while standing a helpless unwilling witness to the wholesale destruction of the best clusters, that the fruit grower should have his legal remedy against the owner of that rapacious freebooter, the honey bee. Something, for example, like a tax on hives, in its operation and effect, like the dog tax for the benefit of the sheep owner. I am acquainted with the arguments which are made to prove the physical inability of the bee to work the damage popularly ascribed to it, but from my standpoint would much prefer to consider the evidence proving an alibi. The bee owes its toleration to the fact, that by the aid of its untiring industry pollenization is more perfectly accomplished.

The roots of our native grapes are proof against the ravages of the Phylloxera or root louse, which has wrought such wholesale destruction among the vine-

yards of France, Spain and Italy, and which has been a menace to the vineyards of California for the past few years; and the only known remedy against this pest, which has demonstrated its ability to destroy the vineyards of the world, if upon the roots of *Vitis vinifera*, is to plant American vines and graft upon them the superior varieties of foreign growth, thereby re-establishing their vines upon sure foundations. Our grapes are unfortunately liable to a number of fungous diseases. Chief among these are mildew and rot. These are of such serious consequence, as to imperil the crop at all times and to render success at grape growing extremely hazardous and uncertain. Every person who has had experience in fruit culture must be strongly convinced that the greatest drawbacks in the business are the diseases commonly called mildew and blight. Mildew is a parasitic fungus, induced by the condensation of moisture upon the surface of the plant. It attacks the leaves and growing branches of the grape vine, and also the fruit. It is greatly encouraged by atmospheric conditions, such as cloudy, dull weather, occasional showers and heavy dews, deposited in positions where the moisture cannot be readily evaporated. So far as is known no peculiar condition of soil, or mode of culture has any influence on its prevention, neither has any mode of trimming or training any efficacy in warding off this disease, except one. If your vine is trained under the projection of a roof or is in some such way protected from the dew, and when moisture from rain is quickly evaporated, you may surely defy the mildew upon such protected vine. The rot in grapes has caused immense loss for a period of more than a quarter of a century, and its effects increase as grape culture extends, until it threatens to cause the abandonment of grape growing in many parts of the United States. Soils seem to have no perceptible influence, as it is found on all grades of soil from the tenacious clay to pure sand, and in all locations, high and low. Rot is of two kinds, black and brown; there seems to be no difference in their effect or operation upon the grape, either will do its work with a promptness and efficiency worthy of a better cause. Rot makes its appearance in this section about July first, and if at that time the atmospheric conditions are favorable, it spreads rapidly and in a few days thereafter, your hopes, as well as your grapes will be miserably blasted. I am not acquainted with any variety which is wholly exempt from its ravages. Of thirty odd varieties growing on my own grounds, the Delaware, the Ives, the Lutie and the Woodruff have been the least liable to rot, while among the general favorites, the Concord, the Catawba, the Niagara, the Telegraph, the Concord Seedlings and the Rogers Hybrids, all highly prized and valuable, the rot generally plays sad havoc. The rot is of the same fungous growth and origin as the mildew, and both are supposed to proceed from the omnipresent, everlasting germ, spore or microbe to whose account the up-to-date doctor charges about all the ills our flesh is heir to. It seems to be a law of nature that there shall be no bane without its antidote, and within a very few years past, preventive agents have been discovered for both these fatal ailments. Repeated spraying of the vines and fruit with the copper solutions from the time the bud starts to open until the fruit is nearly ripe will prevent mildew and save seventy-five per cent. or more of the grapes from the rot. The formulas for these remedies have been so frequently published in the agricultural papers that they should now be quite familiar to every fruit grower. Spraying with both insecticides and fungicides has come to be an essential in successful fruit culture, and the farmer who fails to adopt for his motto, "work, watch and spray," will fail in this enterprise. Bear in mind always that spraying is for prevention and not cure. The cultivation of the grape is as simple as that of corn, which it very much resembles. Keep down the weeds and stir the top of the soil. If the soil is too rich in nitrogen, the vines continue their growth too late and are not sufficiently ripened to endure the winter; neither will the quality of the fruit be so good. Like every other kind of fruit the grape needs potash. The most important part of

the work in grape growing is pruning—important to both vines and fruit. The object of trimming is to remove the surplus growths of vine and buds, thereby avoiding the over taxing of the roots and concentrating the vigor and effort of production upon the lessened amount of wood growths and fruit. Any system of trimming which will remove a sufficient amount of vine, and will admit air and sunshine, will answer the purpose. The correct time to trim the grape vine is in the fall as soon as the leaves are off. The buds which are by this time matured, begin to store energy and vigor for the next season's crop; the plant constantly absorbs food by its roots, which is distributed over the branches, and if you cut away a considerable part of the vine and buds, it stands to reason that the remaining ones will be so much the more strengthened and invigorated, especially because the principal flow of the sap is to the extreme points of the shoots, the highest buds being the most fully developed. If, therefore, pruning is delayed until spring this accumulation is cut off, and to that extent the plant is weakened. As the retained buds become charged with sap during the winter, they start and advance rapidly with the approach of warm weather, thus making the season longer for ripening the wood and fruit. An unskillfully trimmed vine has all of its growths at the ends of its branches, while the main stem is bare of shoots or foliage. Summer pruning has been abandoned by intelligent viticulturists principally for the reason that it involves the wholesale destruction of the foliage at a time when it is most essential to the life of the plant, and a continuance of the practice through a period of years renders the plant weak and makes it a ready prey to prevalent diseases, because of its impaired vitality. Another objection to summer pruning is that the foliage is needed as a partial protection for the fruit. If well directed, pruning is among the most useful, if improperly done, it is the most damaging operation that can occur to a plant.

Of the hundreds of varieties catalogued by nurserymen, but few are grown for the market. The Concord is the most widely cultivated, the best known and the most popular grape we have; it grows everywhere, is perfectly hardy, is a good bearer and of fair quality. It is of the *La brusca*, or Northern fox grape type, originated with Mr. Bull, of Concord, Massachusetts, about 1854, and still stands at the head of its class. The Worden, a seedling of the Concord, of far better quality and the equal of its parent in every other particular, is rapidly growing in favor and bids fair to supersede the Concord as the grape for the masses. The Worden is simply an improved Concord and is the best black grape among our native varieties. The Catawba, which, within my recollection was the great wine grape of the country, is still largely grown in favored localities; it is yet without a rival as a wine grape; in quality it is excellent, a good grower and hardy; a seedling found growing wild in the State of Maryland and first brought prominently to notice by the late Nicholas Longworth, of Cincinnati, about fifty years ago. It is among the latest to ripen and is very prone to rot. The Ives, an accidental seedling discovered by Henry Ives near Cincinnati, is hardy and productive, much overpraised except for culinary purposes, for which it is unexcelled by any on the list. Morris Early, a seedling of Concord, a trifle earlier and larger, a shy bearer and only a moderately vigorous grower. Niagara, another Concord seedling, duplicating all of the good qualities of its parent, is the only native white grape of any commercial value. Pocklington, still another Concord seedling, of better quality than Niagara, but one of the most feeble growers. Woodruff, yet another of the Concord seedlings, a hardy, prolific beautiful, grape. I have sold it for a better price than any other, and am inclined to the belief that it is destined to become valuable and popular. The Delaware is the standard of excellence among grapes; it originated at Delaware, Ohio. It makes the finest light-colored wine known, and is highly prized by connoisseurs. It is a very delicate grower, succeeding only in few localities, and requires certain conditions of climate, soil

and culture; it represents the *Aestivalis* or summer grape type. The Clinton is hardy, a strong grower and productive; it is of no especial value and is the sole representative of the *Cordifolia* or frost grape type. These few varieties comprise the grapes in general cultivation for sale in our markets.

The Roger's Hybrids are a well-known and valuable class of grapes. These are produced by a transfer of the pollen of a native variety upon the pistil of a European variety, or *vice versa*. The seed from the grape thus pollenized produces a hybrid having the qualities of both parents; the superior flavor it inherits from its European, and its hardiness from its American ancestor. Many of these are of excellent quality. They are vigorous growers, attractive in bunch and berry and are easily grown from the slip. If you have in your collection Agawan and Salem red, Goethe white, and Wilder and Merrimack, black grapes, you have, in my judgment, the very best table grapes that grow for us. Unfortunately, however, all of these hybrids, owing to their foreign blood, are somewhat tender; they are also very liable to both mildew and rot; neither are they vineyard grapes in this vicinity, but rather garden pets.

There is at the present time absolutely no encouragement for the farmer to plant grapes for the market. For two years, at least, they have sold below the profit line, and there is no hope of a better price under existing conditions. With our widely diverse climate, our perfect means of transportation, and the facilities for cold storage, fresh grapes are to be had from June until spring, and the thousands of tons of cheap grapes offered in all the markets of the land attest the enormous overproduction. The census of 1890 showed that the viticultural interests of the United States for the year 1889, covered four hundred and one thousand two hundred and sixty-one acres, producing five hundred and seventy-two thousand one hundred and thirty-nine tons of grapes, which would require sixty thousand railroad cars to move. The industry represented an investment of one hundred and fifty-five million six hundred and sixty-one thousand one hundred and fifty dollars, and gave employment to two hundred thousand seven hundred and eighty persons. The acreage has since been largely increased and last year the raisin product alone amounted to over ten million boxes. Grapes were so plentiful and cheap in California last fall that farmers turned the hogs into the vineyards to gather the crop, and first-class raisins were used for horse feed, while the price of a gallon of wine was less than the price of a gallon of milk. There is no reason, however, why the owner of only so much as a town lot should not have an abundance of this delightful fruit for home consumption. Plant grapes along the garden fence and train them upon it; train them on your barn and other out buildings; plant an arbor; it will serve for shade as well as for fruit. Plant the best varieties, trim properly, spray thoroughly and then you may be able to literally sit under your own vine, with not even so much as mildew or rot to molest or make you afraid.

POTATOES. THEIR CULTIVATION, FERTILIZING AND HARVESTING.

BY GEO. W. MACE.

[Read at the Darke County Farmers' Institute, held at Greenville, Feb. 3 and 4, 1896.]

I wish to say at the outset, that I am only a novice in the growing of potatoes and not one of the tribe who thinks he knows it all. I am as yet only a student in the field of agriculture, though I have been all my life directly or indirectly closely associated with agriculture. The more I reach out in my attempts to explore this

field, the more I am convinced how little I know and how much there is to learn. Farmers as well as merchants and professional men, are now realizing as never before, that successful farming in these days of sharp competition, means a thoughtful and careful study as to the needs of plant life, from the starting of the germ until the matured vegetable or grain is reached. Also the sources from which the farmer can best and most cheaply furnish plant food and, at the same time, keep up the fertility of the farm. In the consideration of the special subject assigned me, "Potato Culture," the first item for consideration would properly be the keeping of seed from premature sprouting. This is a most difficult thing to do by the average farmer, who has only the cellar under his dwelling in which to keep his seed or to put them in pits. While he may be able to control the temperature of the cellar during the colder months and keep the eyes dormant, it is a hard job to keep seed from sprouting during the early spring months. In fact it is next to an impossibility to do so unless you are prepared with a cellar or house especially adapted for the keeping of seed where you have the temperature under your control at all times. For the farmer who is not so prepared I would recommend the storing of seed potatoes in pits, quite late, just before danger from freezing. Then after the soil on the pits is frozen cover them with corn fodder, straw or other litter, which prevents thawing. A well prepared pit is much better than a poor cellar.

Seed should be cut according to inherited tendencies of the variety planted. Varieties that have a tendency to set too many tubers should be cut to one-eye pieces. This is true of the Freeman, World's Fair, Irish Daisy and other varieties. I would cut the most varieties of medium sized tubers to two eyes and the larger ones to one-eye pieces, and plant them one piece in a place. The practice of planting small seed—the refuse after the best have been eaten or marketed—is absolutely wrong in principle and unprofitable in practice, if followed year after year. The planting of small seed, the product of fair sized and well selected tubers for one season, may not and quite often does not work bad results, yet if followed for a few seasons will give only small and ill-shaped tubers.

SOIL.

While it is true, potatoes can be grown on almost any kind of soil, it remains a fact, that by judicious selection we can increase the profits of a crop.

A deep, rich brown, sandy loam, well drained either naturally or artificially is the ideal soil for the potato, especially if it has been enriched by clover and manure, supplemented by a direct application of commercial fertilizers to the potato crop. A fertilizer to supply the needs of the potato must contain a sufficient amount of readily available potash, phosphoric acid and nitrogen, especially of the two former named elements. Let me add at this point in reference to commercial fertilizers as applied to the potato crop, that a great majority of failures to get a paying increase of crop from the use of fertilizers is the lack of sufficient available phosphoric acid and potash. When we cease the haphazard application of commercial fertilizers and use them with an intelligent understanding of what the soil and crop needs, we will have a corresponding increase of profits from their use. The reports contained in late bulletins from the various Agricultural Stations, as well as reports from individuals who have made similar experiments, bear me out in my conclusions reached two or three years ago, that the average brand of fertilizer is lacking in available phosphoric acid and potash. We tested this matter last season to our own satisfaction. We applied six different brands to our potato crop. Some of these complete ones, containing the three principal elements of plant food, nitrogen, phosphoric acid and potash. They were applied in varying proportions of these three elements. We also applied plain phosphate, containing but one element of plant food, phos-

phoric acid. The variety with which the test was made was the Irish Cobbler. The brand of fertilizer giving best results was one containing about fourteen and one-half per cent. of available phosphoric acid and a little over eight per cent. of actual potash. The difference in favor of the fertilized row over the unfertilized one with the above fertilizer was one bushel and three pecks, an increase of 51 per cent. The fertilized row making five bushels and nineteen pounds, the unfertilized three bushels and thirty-three pounds; rows thirty-five rods long. My rotation is a four year one. Wheat, clover, corn and potatoes. Barnyard manure applied to the clover stubble in the fall spread directly from the wagon.

By this method and rotation the clover sod and manure is thoroughly decomposed and fine by the time the potato crop comes in the rotation.

TIME OF PLANTING.

My potato ground is always a corn stubble. We have the ground broken just as early in the spring as it is dry enough to work well, plowing seven or eight inches deep and planting just as early as the proper condition of the soil will admit, moon or no moon. We usually plant from the fifteenth to the twenty-fifth of April.

SEED BED.

Make it as fine and mellow as possible with the spring tooth or cutaway harrow, drag, roller and such other tools as may be at your command and best adapted to the purpose. It is of the utmost importance that the seed bed be thoroughly fine in order that the plant food in the soil may be liberated. It matters not how rich your soil may be, if left rough and cloddy the plants cannot make use of it. Work the ground until you think you have it as good as you can make it, then go over it once more.

METHOD OF PLANTING.

We plant with a Robbins planter, in drills, thirty-three inches apart, seed pieces containing from one to two eyes, dropped twelve inches apart, and covered deep from four to six inches. The furrows, dropping of the seed, covering and distributing of fertilizer is all done at one operation. In the absence of a two horse planter I would draw my furrows the same distance apart with some tool best adapted to the purpose of making a deep furrow, and drop my seed twelve to fifteen inches apart in the row and cover with the harrow, drawing the furrows only partly full of loose soil.

CULTIVATION.

Cultivation should begin before the plants break through the soil, with a light smoothing or a common spike-tooth harrow, and kept up continually until the plants are all through. Then cultivation should begin with a two-horse cultivator or a one-horse Planet Jr. cultivator, running the shovels deep and close up to the growing plants, at the first cultivation with these tools. All after-cultivation should be thorough and constant, but shallow, and kept up until the vines cover the ground. You need not stop when bloom appears if your cultivation has been continuous and shallow. Cultivate after every shower just as soon as soil is dry enough to work without packing. If a dry season overtakes you, be vigilant, cease not the stirring of the soil. You would likely injure your crop by ceasing cultivation for ten days or more during a dry time and then go in with your cultivator. Our crop the past season was cultivated ten times with the harrow, two-horse cultivator, and Planet Jr. twelve-tooth cultivator. Beginning with the breaking of the ground in the spring, and ending with drilling of the field to wheat, this field was gone over

twenty-four times, averaging once every five days from the last of April to October. Do your work thoroughly and well, leaving nothing undone you can do, then it will be safe to leave the remainder to Providence.

DIGGING.

We use a Hallock Improved two-horse digger that will leave most of the tubers on top. While it will do reasonably good work it is not to be compared in any sense to the Hoover digger, the most perfect tool of its kind made.

After plowing out, the pickers go along the row picking up the marketable size and placing them in half bushel baskets; when full these are emptied into bushel crates distributed along the row. When picking up the first size, the smaller ones are thrown into piles, about three rows thrown into one; these are picked up and hauled to the barn in crates where they are assorted; those weighing from two to two and one-half ounces are sold as number two for seed. The smaller ones are cooked and fed to hogs. The first size are hauled to the barn, each variety separate, and placed in piles on the barn floor, basement, corn cribs, or whatever available space is at our command. After all are dug and when cold weather approaches these are placed in bins in the cellar, as most of our stock is grown for seed purposes. For the average farmer we believe the most profitable time to sell, as a rule, is soon after digging.

SCAB.

If you want clean, smooth potatoes free from scab, soak your seed one hour and a half in a solution of corrosive sublimate made by using two ounces of corrosive sublimate to each fifteen gallons of water. Never use fresh stable manure or ashes directly on the potato crop as these by contact with the growing tubers induce scab. Save the barnyard manure carefully and apply it to the ground to be plowed the following spring for corn, which in turn we follow with potatoes.

"WHICH IS THE BEST POTATO?"

This question is asked me more frequently than any other and is one that is hard to answer. A variety that may do well one season and upon a certain soil may prove almost worthless under different conditions. Almost every one who grows potatoes, whether a seedsman or an ordinary farmer, has one variety that is *the* best. And oftentimes the seedsman heralds some new variety, the greatest potato yet introduced, and has made the enormous yield *at the rate of* anywhere from eight hundred to thirteen hundred bushels per acre. We hav'n't any of the varieties that produce such fabulous yields. I can only give you my preference of the limited number of varieties I have grown. Of the earlies I would name "Vicks Early Pride, Irish Cobbler and New Queen. Medium Early, Carman No. 1, World's Fair and Peerless Jr. Late, Carman No. 3, Sir Wm. and Rural N. Y. No. 2.

THE BEEF INTEREST.

BY J. A. GERLAUGH, HARSHMAN, O.

[Read at the Farmers' Institute, held at Xenia, February 7 and 8, 1896.]

In presenting the beef interest, we are not unmindful of the greater depression attending the business, during the greater part of 1895.

The beef interest is surely in need of a word of cheer. The spring of 1895, brought with it great hopes for a depressed industry. We sold cattle at the top prices for years; we had great courage; our day had come at last, and nobody had more friends than the breeder and feeder of beef cattle. In fact, it was a *boom*. There was a shortage in cattle that justified an advance; but there was a cry made of a beef-trust, and the beef trade was boycotted and values declined. Then came the severe freezes of May, followed by the unusual drouth of summer, that reduced our pastures to a bare maintenance ration, that made feeding of the late summer and fall an expense grievous to be borne.

It is said, "Troubles never come singly," and accompanying this, the price of hogs went to the bottom, dragging with it every meat interest in the market. In evidence of this fact, let me quote from Watson's Chicago Business Letters, in "The National Stockman," for January 9th, and 30th, 1896.

"In this country, hog meats, both fresh and cured, largely in consequence of their cheapness, have taken the place of beef to a remarkable extent, and for a similar reason, the exports of provisions have increased very greatly." Concerning the scarcity of cattle, the same authority says that the receipts were the smallest received at Chicago, since 1887; four hundred thousand head less than in 1894; one million less than arrived in 1892. There was a similar falling off at other points, the decrease at Chicago, Kansas City, St. Louis, and Omaha, being seven hundred and ten thousand and eight hundred head.

Our different breeder's associations have discussed the situation in detail, and I know nothing more aptly put, or from a better authority than the paper read before the Illinois Cattle Breeder's Association, by A. C. Halliwell, editor of the "Drover's Journal." It is as follows:

"During the last year while three or four of the principal markets of the west handled nearly seven hundred thousand fewer cattle than in 1894, prices at the end of the year were decidedly lower than at the opening. There was a sudden and unexpected reaction after the top point of the year—\$6.60—was reached last March. There were various contributing causes for that, including general hard times, weak foreign demand, low prices for other kinds of stock, but none was more potent than the widely heralded allegations of the secretary of agriculture about there being a beef trust to advance the price of beef beyond figures that poor people could pay. The allegations had the widest possible circulation owing to their emanation from an authority who was supposed to be devoting his best efforts to the advancement of the interests of the live stock and agricultural classes. The consumers at once argued that if the supposed friends of the cattle-producer were taking such a position, it was high time to begin practicing vegetarianism. However, the fact remains that while the cattle supply was so short as to make dealers look for extravagant prices the people got the impression that beef was dear at any price, and so prices steadily moved downward after the first quarter of the year, closing at the very bottom. The economical fad caused by hard times, made people use less meat and look for substitutes.

The outlook for an improved home demand for beef cattle is better on the two principles that 'when a thing is bad as it can be, it can get no worse' and that 'everything in the universe is continually changing.'

So far as I am able to see the situation, prices for cattle have been unduly depressed from indirect causes, some of which have passed with the year, and we look to 1896 and wish there may be no boom in prices; no killing frosts; no barren pastures; no general depression in business.

From causes beyond our immediate control, we may turn to those that come within the range of our ability to improve. First and foremost of these, is our opportunity to reach the top of the market, or to get out all there is in the business. It is a significant fact, and well put by the Breeders' Gazette, when it said, "Whatever the range of the market, it invariably has two features—a top and a bottom—, and between these top and bottom figures, there is ordinarily a great gulf fixed. This difference we call quality. That is what the buyer calls it, and as he pays more for it, there must be something to it. If we seek for an explanation of this characteristic, we shall find it in blood—blood that gives form and feeding quality. Many men have learned this lesson, hence the market has a top. More men have not learned it; hence the market has a bottom."

The Gazette has also furnished us with unusually valuable information during the past year, concerning the feeding and breeding of cattle that have brought the top prices in the Chicago Stock Yards. I think I am safe when I say that more than nine-tenths of these reports, show that the top prices were received for cattle, showing blood of the distinct beef breeds. Another feature of the market decidedly in favor of the breeder of early maturing beef cattle, is the fact that during the past year twelve hundred and thirteen hundred-pound steers have brought as much money as the sixteen hundred to eighteen hundred-pound steer.

We know that the dairy breeds are making it harder each year to secure a bunch of desirable feeders. It is well nigh impossible for a feeder to go into our markets in Ohio and purchase a car load of well bred steers. I have in mind a feeder who purchased six or eight car loads of good steers in Cincinnati, during October and November, who kept a man on the market continuously for weeks to secure what he wanted. In recognition of this fact, our Ohio Agricultural Experiment Station at Wooster, has recently given us valuable information in bulletin number 20, on "Feeding for Beef." These experiments were made with thirty-one steers, a mixed lot, just such as are likely to be the most easily obtainable. I wish to notice under the heading "Some possibilities in cattle feeding," pages 26 and 27, some striking statements they make. First—The cost of increase was fifty per cent. greater in the case of the eleven worst steers, than in that of the eleven best ones. The rate of gain of the whole lot was only a fraction over two pounds per day. The cost of this gain was seven dollars and eighty-two cents per hundred. The net selling price was four dollars and fifty cents per hundred, which paid the cost of feed and allowed three dollars and sixty-six cents per hundred pounds on their weight at the beginning of the experiment. In other words, an advance of eighty-four cents per hundred pounds paid the cost of food consumed during the feeding period of one hundred and twenty days, estimating it at its full market value, but making no allowance for the straw consumed, for the labor of caring for the cattle, or for interest on the capital invested.

Now from these facts it appears that while the cattle were not a select lot, they yet paid a full market value for all they ate while carrying on an experiment of feeding materials, with corn valued at thirty-nine cents per bushel, wheat at fifty-two and one-half cents with one-eighth allowed for grinding.

Another equally interesting experiment came under my notice,—That of the Ontario Agricultural College, where sixteen steers were fed on coarse, bulky food. It was my privilege to see them last May, when they had been on feed six months. I was much surprised to find them, as a lot, showing so little quality, but I suppose they represented more nearly what could be done with the average steer. I have since gathered the following facts concerning them:—On the 6th of November, 1894,

sixteen steers, rising three years old, were purchased by the farm superintendent, Mr. Rennie, in the Guelph market, at three and one-half cents per pound, the average weight per animal being eleven hundred and fifty-seven pounds. They were fed largely on rape until Christmas, receiving in addition, night and morning, a mixture of cut hay, chaff, pulped roots, and ensilage, about twenty-five pounds per day; also two pounds of crushed barley and oats, with one pound of bran per day; the cost of feed per day for each animal being about seven cents, including the rape. During January, February and March, they received no hay. The food fed to them was a mixture of chaff, ensilage, pulped roots, fifty pounds per day, fed in three meals, at 5 A. M., 12 noon, and 6 P. M.; the cost for each animal being eight cents per day, including four pounds grain and bran. With these rations from the 6th of November, till the end of March, one hundred and forty-four days, they gained an average of two hundred and sixty-five pounds per animal, or one and eighty-four one-hundredth pounds per day. Allowing forty pounds each for shrinkage, the net gain was one and fifty-six one-hundredth pounds each per day for one hundred and forty-four days.

The cattle were held until July 26th, so that the large number of farmers who visit the college during June and July, might see the results of this method of feeding. More money could have been received, had the cattle been sold earlier, as we see that one pound of gain for the first one hundred and forty-four days cost four and eight-tenth cents, while one pound gain for the last one hundred and sixteen days, cost nine and five-tenth cents, or one pound gain for the whole period of two hundred and sixty days, cost six and six-tenth cents per pound.

The cattle sold at.....	05½
Gross gain	\$721 03
Cost of feed.....	378 72
Net gain for sixteen steers.....	342 31
Net gain for each animal.....	21 39

These experiments indicate a profit in handling beef cattle that will be received much better than any individual experience I might forward. They also justify the statement that we can just as well expect to make money from feeding good cattle as any adjunct to good farming in Greene County.

Had I come before this institute last year with the subject of wheat, and said that in a few months the price would advance thirty-three per cent. and that before another year the value of wheat would be more than double that of corn, you would have pronounced me a fool and later a prophet.

Beef cattle to-day, have about as few friends as wheat had one year ago, and yet we have just as good reasons to expect to see them assume their proper value and even lead the meat interests.

THE SHEEP.

BY F. T. GEARHART, CIRCLEVILLE, O.

[Read at the Pickaway County Farmers' Institute held at Williamsport, Jan. 27 and 28, 1896.]

The discoverers and conquerers of the Western Hemisphere found here no domesticated sheep such as they had been accustomed to seeing in their own countries, but found instead a wild sheep inhabiting the Rocky Mountains, and *they* were thought by many to be a species of deer.

The domesticated sheep were first introduced on this continent by Columbus in 1493, and in 1736 there were over one million five hundred thousand of them in the Mexican State of Nuevo Leon alone.

Sheep husbandry had by this time become very important and profitable in all settled portions of the continent.

A noted writer in his treatise on the sheep, says: "Until the introduction of the Merinos into North America little that was satisfactory could be affirmed of the sheep of any part of this country.

Many portions of the United States and even of Canada possessed advantages for the breeding of sheep that were not surpassed in Europe.

The country was undulating or hilly—the inclosures more extensive than in the best breeding districts of England—almost every pasture furnished with running water, and sheltered more or less by trees against the summer sun, yet the sheep were of the commonest kind.

There was a prejudice against their meat, a prejudice against them altogether, and there was scarcely a district in which the wool was fit for any but the coarser kinds of fabrics.

It might have been thought to be the policy of the mother country to foster a prejudice of this kind, in order that her colonies might be as dependent as possible upon her; and particularly that her woollen manufactures might then find a ready sale. Accordingly the American sheep, although somewhat different in various districts, consisted chiefly of a coarse kind of Leicester, and those were originally of British breed.

Merino sheep were first brought to America in 1793 by a wealthy gentleman by the name of William Foster, who "smuggled" and brought home with him three sheep—one male and two females.

Pure-bred Southdowns were first successfully introduced into the United States in 1803, by Dr. Rose, of New York.

Other breeds were being introduced into this country about the year 1800, and among them were the Arlington, Ancon or Otter, Tunis or Barbary, New Leicester or Bakewell, the Marengo, Texel, Friesland, Teeswater, Devonshire and Lincolnshire.

In 1810 and 1811 about twenty thousand Merino sheep were imported into the United States, and some were sold as high as nine hundred dollars a piece.

At this time (1810-11) it is estimated that there were in the United States about seven million sheep; consequently the increase was very great until 1815 and 1816, at which time, because of the low price of wool, entire flocks were destroyed. But about 1820 woollen manufactures revived and attention was again directed to the raising of sheep; and since then it has been one of the leading industries of this country: it has not, however, been all sunshine, ease and big profits, for in the years 1846 to 1855, because of the ruinous low prices of wool, the total number of sheep was allowed to diminish more than one-half.

During the war of the rebellion there was a great demand for wool, and it brought as high as one dollar per pound; then came the relapse in 1867, when thousands of sheep were slaughtered for their pelts.

One year ago there were in the United States over forty-seven millions of sheep; to-day there are about eight millions less, and the sheep-owner seems to be just holding on to the business for the name of the thing, or for the pleasure there is in it. And let me emphasize the word *pleasure*; for it really affords me *great* pleasure to feed and handle my small flock of Shropshires.

But there are other things to be taken into consideration in connection with the raising of sheep; one is the ability, superior to that of any other animal, to convert the produce of the farm into a highly concentrated fertilizer.

The Italian proverb, "a sheep is the best dung cart," is proven by the fact that

thirty-six pounds of sheep excreta are equal as a fertilizer to one hundred pounds of ordinary farm-yard manure, being richer in nitrogenous substances than that of the cow or horse, ranking next in ammonia and richer in the phosphates than guano or the droppings of fowls. They are also great scavengers, often eating weeds and coarse herbage; they will nip the leaves and small branches from almost every shrub and weed, entirely ridding our pastures of many troublesome weeds and plants.

It has been found by actual test that they will eat of one hundred and forty kinds of herbage which other farm animals refuse.

They are powerful digesters, thereby destroying the vitality of everything they consume, and thus they do not, like cattle, scatter foul seeds behind them, while from food eaten they extract more nutriment than any other animal.

There is less danger of losing life or limb while among them, feeding and handling them, than any other stock; and they do not require any more care or attention than the other farm animals should receive; they should have dry, clean sheds in which to spend the nights and wet days in winter, and the hot days in summer; cold does not hurt them, but heat and dampness are injurious to the sheep and a source of loss to the owner; they must have a supply of clean, fresh water convenient, and salt placed where they can have free access to it; pulverized rock salt is the best and the most economical.

In order to keep a supply of clean salt within reach of the flock, I made a trough eight feet long, twelve inches wide and two inches deep, and a box or hopper of the same length, like the grain box on a drill, except that it must be open at the bottom. Set this box in the center and about one inch up from the bottom of trough and fasten securely; fill the box with salt, and the sheep will do the rest.

In summer I keep tar on the sides of box where the sheep will get it on their noses when licking for salt, and thus torment the flies some while they are tormenting the sheep.

The food necessary for their maintenance is grass, clover hay and corn, and perhaps I might add beets or apples.

To be sure you must keep on the lookout for flies, ticks, dogs and paralysis. From the last named, I last summer lost three of my best ewes before I found a remedy; which was simply to remove them to another pasture, after which I did not lose a single one.

I have the lambs come in February and March. I consider one early lamb is worth as much as two late ones.

To shear, I place the sheep upon a table made trough shaped on the top and high enough that I can stand up straight and work with ease and comfort. But I do not shear until warm weather in May, when all danger of chilling rains is past. I do not try to hold a sheep by catching it by the wool or the legs, nor do I ever tie one to shear it.

The wool should be perfectly dry, cut from the body and limbs smooth and clean and tied in nice, compact bundles; use nothing but wool twine and wrap twice around the fleece.

Don't put bells on your sheep, or if you have them on, I ask it as a favor in behalf of the sheep that you leave them off at the next shearing. I believe it is a practice that belongs to the age of horned milk-cows.

And now in conclusion, if you want the nicest, most healthful and cheapest meat in the world, you have but to dress properly a fat Shropshire lamb and you've got it.

POULTRY FOR PROFIT.

BY CAPTAIN W. H. TAGLEY, HAMLET, O.

[Read at the Farmers' Institute, held at Mt. Carmel, Feb. 10 and 11, 1896.]

In these days of business depression, low prices and general discouragement, it behooves the farmer to turn aside from his well-beaten paths, in order to attempt the solution of the bread and butter problem by other and untried methods. Not, however, in the sense of a drowning man grasping at a straw, but by legitimate, honest, continued effort. To many a farmer the poultry business as an appendix to his regular farm work would certainly be an innovation. At this time poultry raising is among the most important occupations of the country. It has passed its experimental stage, when those engaged in it were supposed to be cranks, afflicted with the hen fever. The business has grown to be one of immense proportions, it is founded upon legitimate profit, and its permanency is well assured. Its profits are as staple as are those of wheat or corn, without the quality of being cornered by exchange gamblers, or of becoming the bait for bulls and bears. There is absolutely nothing little or trivial about the poultry business, and no one need be ashamed of it. At its foundation is the enormous annual production and consumption of eggs and fowls, two of the most agreeable and wholesome foods known to man. Comparatively few people realize the magnitude and value of the yearly egg and poultry productions of this country. The United States produces in a single year seven hundred and fifty million dozen eggs, which, including those used by the producers, allows one hundred and forty per capita, and which, at an average price of sixteen cents per dozen, amounts to one hundred and twenty million of dollars, if to this be added the money value of the poultry production, the amount is as great as that of any other product.

Besides this we paid last year three million dollars for European eggs and two million dollars for eggs imported from Canada. Ought we not to save this item of five million dollars for ourselves and cease to import eggs?

Farmers, generally, in this part of the country have neglected to add poultry-keeping in a skillful or scientific way to their general farming business—they have been content with the old mongrel fowl of the long ago, which by continual in-breeding and lack of proper attention, has lost whatever desirable qualities it may have, at one time, possessed. His flocks roam at will over the farm and highway, as much at home in his neighbor's fields, garden or door-yard as any where. And here I wish to remark, that no greater nuisance confronts the way-side or village dweller than these same uncouth flocks of plebeian ancestry, with their acknowledged ability to fly and scratch. The law-making power of the state should be invoked, to require every owner to restrain and care for his chickens and turkeys, geese already being subject to the stray law.

Poultry raising requires time and attention to details. Wholesome food in sufficient quantities, fresh water and comfortable, clean quarters—and without time and care what profit or success comes in any line of effort? Neither can you properly care for your poultry by proxy. The man-of-all-work upon your farm, while perfectly competent and satisfactory in his daily routine, may be utterly incompetent to feed the chickens, not so much by reason of not knowing how, as by want of caring how. While you are looking for and anticipating profit it will add greatly to your interest if you can see beauty, grace and elegance in your feathered family.

As to profits, the poultry journals are filled with the accounts of production and sales of the great poultry farms of the New England States especially. I have just

read of a Rhode Island duck farm where eighteen thousand ducklings, weighing fifty-four tons, were raised and sold during the past season, at splendid profits; and of nother, whose net profits on seven hundred ducks were nearly one thousand dollars. And what would you think of selling a spring chick weighing four pounds for one dollar and sixty cents, and a five and a half-pound roaster for two dollars and twenty cents? These prices and profits are not exceptional cases, but are in the range of probability among scientific poultry men who make the raising of fine poultry a specialty. As a matter of course such ducks and chicks were as fine as silk, yellow-skinned, clean-picked, plump and fat, in striking contrast with the blue-skinned, bone-and-sinew specimens so frequently seen in our markets and which sell at eight to ten cents per pound, bringing sixteen to twenty cents each. But until the demand in our markets shall require such high grade poultry and until we shall have been educated up to its production, such prices and profits as I have quoted are as far from us as are the South African diamond fields or the Alaskan gold mines. It is asserted by different poultry men, that the natural product at regular market prices of a well-disposed, well-cared for hen is worth two dollars to three dollars a year, leaving the owner from one dollar to two dollars net profit. My own experience accords with this estimate. Assuming proper care and attention and comfortable quarters, the main factors which enter into the matter of profit, are feed and breed. All calculations of profit in the poultry business are based entirely upon thoroughbred stock, which fact I wish to emphasize. Every argument made in favor of thoroughbred blood in stock of any kind, applies with equal force to your domestic fowls, and it is just as reasonable to expect the best returns from a dairy of Pennyroyal-cows, or a drove of razor-backed hogs as to expect profit from a flock of dung-hill fowls. Fowls have always been the companion of man in all of his stages of existence—always contributing largely to his food supply. When first domesticated, or by whom, is past finding out. The original home of the chicken is Asia, the ancestors of our breeds were natives of India and the Asiatic islands, where the jungle fowl, the same type, still flourishes as prey for the hunter. The chicken in all of its history has been remarkable for the facility with which different species will unite and produce fertile offspring, a peculiarity which renders it doubly valuable to mankind. Taking advantage of this quality and supplementing the laws of natural selection and survival of the fittest, by the art, the judgment of intelligent men, who have devoted their talents in this direction, we have as the result our present breeds of magnificent thoroughbred fowls. Two general types have contributed as foundation for these. The large breeds as Cochin, Brahma and Langshan have been produced upon the Jago type. These and their numerous varieties are termed Asiatics. They are all grand fowls, having certain typical characteristics, such as large plump bodies, abundant plumage and feathered legs and toes. Each of these breeds is admired and valued for some distinct quality. From the Javan type we have the Leghorn, the Spanish and the Minorcas, called the Mediterranean fowls. They are all distinguished for their superior laying qualities, and in this regard are unexcelled. They are distinguished by their small bodies and superabundant growth of comb and tail feathers, especially in the male. Two Japan cocks were exhibited at the Columbian exposition, in very tall bamboo cages, with tail feathers ten and a half and six feet in length, showing to what an extent a single feature may be perfected. The Polish, the Hamburg and the game are all of the Javan type. These, while classed as fancy fowls, are in no wise lacking in utility; to their beautiful plumage, and odd features they add the quality of being good egg producers. All these breeds with their numerous families and varieties have been bred and improved both in this country and in Europe until it would seem as if the acme of perfection had been reached. Not so, however. American inventive genius, always on the alert for new and better things, evolved out of the material

at hand the two famous, all-purpose American breeds, the Wyandotte and the Plymouth Rock. At the present time these two are the *ne plus ultra* fowls for the American farmer. Among the recommendations they bring being good layers of large, fine-flavored eggs, good size, plump and yellow-skinned, fine plumage, easy to control and for the table are absolutely without a rival. The standard weight of these breeds is but little less than that of the Asiatics. They are better layers and have clean legs and feet. It would have been un-American to manufacture breeds with feathers on their legs. Profit in the poultry business is confined principally to two features, eggs and early hatched chicks for broilers and roasters. In order to make a business of raising early hatched chicks resort must be had to artificial incubation and brooding. The modern incubator is now an almost perfect machine, doing its work with such certain regularity as to excite our wonder and admiration. Artificial hatching is an old art, dating in Egypt from the earliest ages, once more proving the proverb, that there's nothing new under the sun. The Egyptians have practiced it so long that their hens have completely abandoned that part of their work and hatching to them is a long lost art. In an extract from the report of the United States consul at Cairo of recent date, he says: "Artificial hatching is here a regular industry and its professors form a close corporation, handing down their secrets from father to son. For three months, February, March and April their time is wholly absorbed by constant attention at their incubators. These incubators are simply long huts made of sun-dried brick with mud for mortar and are heated by fires made from the dried excrement of their cattle, sheep and goats. No thermometers are used, the attendant judging the degree of heat by the heat of his own skin. These incubators have a capacity of from three hundred thousand to six hundred thousand each per season. As soon as hatched the chicks are sold to women whose business it is to raise them to selling age. A moderate estimate of the number of fowls thus hatched, raised and consumed by Egypt's seven million people is forty-five million, or six and a half per capita. A short supply." Cross-bred thoroughbred fowls are the kind most commonly used in this country for the production of first-class broilers and roasters.

Eggs are, to be sure, an all the year round crop, differing in this respect from the other farm crops. They are universally popular as a diet, an egg being in itself a complete food. Winter eggs have heretofore afforded more profit than those of other seasons of the year. To have winter eggs, you must feed for eggs and not for fat. Have your pullets hatched not later than April for the large breeds and not later than June for the smaller ones. Grow them to maturity by proper feed and care as quickly as possible, so that they will begin to lay in November and continue laying through the winter. Old hens begin to moult in the fall or early winter and for a period of about one hundred days thereafter are not in condition to lay. For this reason, mainly, old hens are not to be considered for winter layers. You must feed especially for eggs. The hen is literally an egg machine, her chief purpose in life being the production of eggs. Like any other machine, she must be supplied with the raw material with which to manufacture her products. Her instinct teaches her how to select; all that is necessary is to place within her reach that which she requires, and eggs will be abundant. To produce an egg the hen must have a certain kind of food for the yolk or fat portion, known as carbonaceous; for the white she needs rich food for nitrogen from which she makes albumen, and for the shell she must have lime. Feed regularly, that is at about the same time each day. The morning meal should consist of a hot mash the chief ingredient of which is wheat bran or shipstuffs, with a small portion of middlings and corn meal; table scraps, boiled potatoes or turnips may be mixed with this feed. Season with a little salt and an occasional red pepper. At noon scatter a little grain of any kind except corn among the litter, where the hens will be obliged to scratch for it. I frequently give mine two or three sheaves of oats

for seventy-five hens for a noon feed. At night feed about all the whole corn they will eat, as it serves both as food and fuel during the long cold night. Whole wheat is also an excellent food at night. In addition, they must have daily some green food, as growing rye, cabbage, turnips or clover. Green bone cut or pounded is one of the very best articles of food both for growing chicks and laying hens. A meat ration two or three times a week, an abundance of fresh, clean water at all times and plenty of sharp grit are indispensable. Milk, either sweet or sour, may be substituted for the noon feed or given at any time except during the hot weather, when tyrotoxicon, or toxic acid, sometimes develops and causes death to the fowls and chicks. Eggs are flavored by the food on which the hens feed. Those fed on putrid meats, decayed vegetables, musty grain and from a dirty surface will lay eggs not fit to eat. The drinking vessels should also be kept clean and the water pure and constantly before them. It is surprising how much water a flock of hens will drink in a day. Water is one of the principal substances in an egg. The egg market has sympathized this season with the general depression in prices of farm supplies, and there is no hope of betterment until the shop door shall again be opened, the furnace fires lighted, labor everywhere employed and foreign competition again shut out. The demand for fresh eggs is greatly curtailed because of the competition of cold storage and other stale eggs.

The dishonest practice of preserving cheap summer eggs for the winter market and selling them for fresh is likely to meet the fate of all other impure food through the operation of the pure food laws of the state. Not only in cities where advantage of cold storage may be had, but all through the country merchants and farmers resort to all manner of schemes to keep the summer egg in its shell for the winter market, and it is sincerely to be hoped that the sellers of such eggs will be obliged to label them stale, and boarding houses and restaurants using them be compelled to put up a sign, "stale eggs used here," as in the case of oleomargarine. Both the broiler and the egg features of the poultry business being most profitably conducted in the winter and early spring months before farm work proper begins, there is no reason why many farmers who need to add to their incomes should not themselves engage in this occupation and not, as is frequently the case, impose upon the already overtasked wife the care of the farm poultry. In addition to the profit derived, it affords the relief of having something to do during the dreary winter days.

In conclusion, it is within the experience of us all, that "The best laid plans of men and mice, gang aft aglee," and after having arranged all things according to regulation methods, not neglecting feed, breed or any other essential thing, yet the measure of profit in the poultry business as a farm adjunct, will be determined by your patience, your painstaking industry and your economical management.

OLD FASHIONED BUTTER MAKING.

By MRS. W. J. NORRIS, FRAZEYSBURG, O.

[Read at the Farmers' Institute at Frazeyburg, December 13, 1895.]

No doubt some of you will be surprised when I assert that as good butter can be made in the old fashioned way as with the modern creameries. In taking this side of the question I would not advise you by any means, to still continue in the old way. I will admit that it requires much more labor, nor is it the kind of labor

that will leave you plenty of leisure for rest, reading or visiting, etc. It can be done, but not in the haphazard way that some attend to it. Do not understand me as being opposed to creameries, separators, swing churns or any other late improvements along this line, for I certainly think all are grand inventions, and will gladly hail the day when a creamery will be running in our own community; but we cannot all have these modern inventions or do not for some reason, and it is to this class that I wish to speak a word of encouragement.

I am well aware that I cannot begin to tell you all about butter making. I have not the time, nor do I begin to know all about it. It is to be assumed that we all make good butter. Did you ever see a woman that (in her own opinion) did not? But do the majority make as good as they might?

It is true, we have very little encouragement from our merchants for any extra pains we may take in having it attract both eye and taste of consumer, as it is all dumped into one keg and Mrs. B. gets as much for her axle grease as Mrs. C gets for her extra rolls. Now there are several essentials in good butter-making; first of all is good butter cows, second, feeding for butter, then follows a combination of things; milking regularly, cooling milk as quickly as possible, in summer using plenty of hot water and sunshine on all milk pails and crocks, (for that is what we still use, hoping to get out of the ruts as soon as convenient); in fact practicing cleanliness from the time cows go into the barn until you market your butter. As I have said before, we set our milk in crocks, cooling it in pails before taking to the cellar, by setting them in tubs of cold water, stirring it while cooling, which takes only a very few minutes. This, of course, increases labor but raises the cream quicker and helps to assure solidity in the butter; as some one has said helps it to stand up the year round. We are very careful to stir our cream thoroughly and often while it is ripening and never add any to it the day it is to be churned. We like the cream to become a little sour before churning; we also aim to have it evenly ripened so as to have the butter uniform; and right here I want to say that I think the Jersey cow excels all others in making uniform butter, although uniform butter can be made from any good butter cow, but it requires more skill on the part of the maker.

Some argue that much depends upon the kind of churn you use, this may be true but I believe there is more in the condition of the cream than in the churn. Some let the cream stand too long before churning until it becomes almost rancid and in doing this you not only have less butter but of a very poor quality. As to salting and working butter I try as nearly as possible to use one ounce of salt to one pound of butter using the best dairy salt I can get and working so as not to injure the grain but enough to extract the butter milk from it. The churning certainly must be attended to at the proper time to obtain best results; anything that is worth doing at all is worth doing well.

I firmly believe that it does not take any more labor to make good butter, than it does to make poor butter but more care and perhaps a little more skill. It is a pleasure to me to make and market butter, and I have no trouble in finding private customers. After you have succeeded in making good butter you should be very careful where you keep it until it is marketed, for butter is very susceptible to odors from oils or vegetables, this will apply to the consumer as well. I have known extra fine butter to become tainted in a very short time by being kept close to vegetables or in an illy ventilated cellar.

Now if any farmer's wife or daughter can get any thing out of this little talk that will help her I will feel amply repaid for my effort in preparing this paper.

AGRICULTURAL FAIRS.—THEIR BENEFITS, DEFECTS AND SOME HINTS FOR THEIR IMPROVEMENT.

BY T. F. LONGENECKER, DAYTON, O.

Realizing the importance of a well developed system of agriculture, and knowing that this can be attained only through the general knowledge of the individuals engaged therein, the central government established the Department of Agriculture. At first this Department dealt largely with statistics, which were distributed to all who applied, and sent out seeds ostensibly for the purpose of having varieties tested.

Finding that more than statistics was needed, the following divisions in the Agricultural Department have been made:

Weather Bureau, Division of Agriculture, Ornithology, Mamology, Entomology, Botany, Vegetable Pathology, Pomology, Forestry, and Bureau of Animal Industry.

By act of congress the general government aided in the establishment of State Agricultural and Mechanical Colleges and later in the State Experiment Stations.

The experiment stations, by putting the results of scientific research into practical form and by having specialists in botany, entomology and pomology, who not only devote their time to studies and experiments in their specialties, but who come to our farms and gardens and aid in the solutions of the various problems that are constantly perplexing us, have put themselves in very close connection with the farmer. In tests of varieties, if we are content to wait until the results of their experiments can be made known, the experiment station stands as a monitor between the farmer and the unscrupulous advertiser of novelties.

In addition to the agencies named we have as a further incentive to farmers the county and state fairs. At the county fairs, where properly managed in the interests of the various industrial pursuits and where not subverted to gambling and other immoral practices, the patrons, and this includes persons of nearly all pursuits, have opportunities for learning by observation and comparison what can and should be done in any community.

The manufacturer and the mechanic, the merchant and the laborer, the farmer and the housewife, the horticulturist and the gardener, the horseman and the dairyman, the breeder of swine and the shepherd, the poultryman and the apiarist, the artist, and the teacher may all contribute to the success of the fair and gain from others valuable information that is applicable to their own work. This should be the primary object of the fair and I am glad to know that where diverted from this purpose the fairs are a failure financially. If not conducted with worthy motives they should fail and that they do fail is only a proof of the good judgment and morality of the classes to which the mismanagers look for patrons.

At an ideal fair the merchant can advertise his wares and make acquaintances; the manufacturer can give ocular proof of the claims he makes in regard to his goods; the laborer may learn of many economical things for household use; the mechanic has opportunities for examining the finished products in his line of work, and thus perfecting his knowledge and increasing the effectiveness of his labor; the progressive teacher has opportunities for showing the result of intelligent work in the schoolroom and thus aiding in a more rapid development of mind, and I believe we do justice to teachers when we say no stronger appeal for their aid, than this, can be made to them.

Now, let us consider the farmer in his relationship to the fair. The fair should appeal to his pride and to his interests for a full display of the productions of the class to which he belongs, and thus showing to the world that in the rapid improvements now transpiring in all pursuits the farmer is abreast with all other industrial

callings. A man who does not aid in imparting knowledge cannot receive much of it himself. By taking the best of his products there and exhibiting them, he arouses within himself a stronger interest in and a greater disposition to study the very best his neighbor can accomplish than he possibly could in any other way.

There are many surprises in store for the man who exhibits at the fair. If he is excelled by his neighbor he may learn wherein he has failed and thus correct his errors and render his own labors more effective. If he excels his neighbor he not only gives him these opportunities for improvement but arouses within himself a desire to maintain his excellence and this means more study and more improvement.

A man may be growing a variety of grain, vegetables, or fruit, that he supposes is par excellence, but when it is placed side by side with others, see that they excel it in quality, and he learns by conversation with the producer that they excel it in yield, or he may also learn by observation that varieties of which he had formed a very favorable opinion by reading and hearsay and which he had intended planting, are not to be compared in value with the old varieties that he has been growing for years. Thus, if he is excelled by others, he learns of improvements in methods of cultivation, or how to make a profitable investment in other varieties. If he excels, he may be saved from making unprofitable experiments and investments.

With the progressive farmer there must of necessity be a constant study of the comparative values of different methods and varieties. The values of good methods do not vary so much in a given locality as do the values of varieties. The farmers in all parts of Ohio pursue nearly the same methods when their soils are similar. The variations in profitable methods are usually caused by variations in soils and these variations may occur in the same vicinity.

The comparative value of different varieties may vary materially in the same locality, owing to altitude and different soils, and again, the same varieties that are found the most valuable in Northern Ohio may not be the most valuable in Southern Ohio, even though they are grown upon similar soils.

When making a study of varieties at fairs the farmer, or the man who plants only for family use, should never lose sight of these facts. Get acquainted with the exhibitors, especially if they are growers of the products they exhibit, and make inquiry in regard to these things. Usually they are men enthusiastic in their vocations, and will cheerfully give information.

They in their turn will question you, and there is a fair exchange. Don't be afraid of being repulsed. The only men who will do that are the men who gather their products for exhibition in the same manner as hucksters gather their goods. Even these men, hucksters they are sometimes called, are able and willing to give valuable information. The honest exhibitor is just as anxious to make your acquaintance as you are to make his. In these days of active, driving competition we cannot afford to disregard these sources of information.

So far we have spoken only of the advantages to be derived from attending a good fair. It may be proper also to offer a word of criticism and advice which, if it does not directly reach the ears of fair managers, may through the demands of farmers have its influence upon them.

The managers should exhibit business foresight in selecting honest, competent judges who are specialists in their lines, and should have their names published in connection with the class of exhibits upon which they are to pass. Honest exhibitors and intelligent patrons of the fairs demand this.

Every argument is against the usual haphazard, picked up, prominent citizen, good fellow, judge system. There would be about the same chance for a competent decision being rendered when an ordinary farmer is to pass upon the intricacies of an electric motor as where the average office man is to pass upon a class of fine horses or other improved stock; and the same can be truthfully said of any other

class of products where the judges are not practical breeders or handlers of the classes they are to pass upon. Nor does the trouble end here; in truth it has only begun.

The breeder who has bred and fed his exhibition stock for years has no advantage over the trickster or the novice, and the man who pays his good money to get to see the show of stock, in order to learn something of improved stock and improved types, leaves the ground disgusted and uninstructed. The only redeeming feature connected with the whole farce is that the management sinks into disrepute.

This system of judging is practiced in no other departments save that of the farmer and breeder. The machinist has competent, practical men supplied him, who are versed in the intricacies of mechanics, to pass upon his exhibits; the artist's labors are passed upon by a judge who is familiar with the uses of the easel and brush.

In nearly every department, excepting that of stock, the exhibits should be arranged and classified by a specialist. By this method exhibitors are often prevented from entering excellent specimens under wrong names and thus depriving themselves of premiums that the same article would justly receive if properly entered. By classification an individual can readily see whether he has his varieties properly entered, labeled and located. The patrons of the fair can readily locate and study any special variety, learn where and under what conditions it was grown, of its variations in different localities and thus arrive at a definite knowledge of how it would likely succeed with them.

Where products are properly classified we avoid the delay and confusion that invariably ensue where each of the exhibitors must carry separately every article of his exhibit to the awarding judge. Where the exhibitors carry their products to the judge for his decision they of course know that he sees the owner with his products.

Any man is likely to see superior merits in an article which he owns that others fail to detect, and when one article out of a dozen or more secures the premium, some of the owners of the other articles are very apt to accuse the judge of partiality, and before he gets through a long list, a wrangling ensues that is exasperating to those connected with it and amusing to spectators.

Where classification is practiced the judge need not and is not supposed to know the owner of a single article.

Classify the articles properly and then have competent, honorable men who are familiar with the classes upon which they are to pass, pay them, and claim their best services, these are the only remedies for these evils.

The time was when the fair was looked upon as a time of mere recreation—a time when the people could come together for pastime and association—but now the fair has come to be a great object lesson. Fairs should move intelligently; the people have begun to think correctly, and the oldtime slipshod methods are being ignored in every line of life.

Fair managements must be kept in line, and remember that the exhibition is half of the show. No matter how attractive the grounds or how thoroughly the fair is advertised, if the industrial interests are made the tail of a kite that men interested in gambling are trying to fly the fair should and will sooner or later come to grief.

We have spoken of fairs in general. Let us now turn to our State Fair, which may truly be called an ideal fair. If the benefits of the county fairs are those already named, how much greater are those of the State Fair, for it attracts men and products, not from one section of the state, but from all and from other states.

Located on beautiful grounds with all the conveniences for both exhibitors and patrons that skilled labor can produce and money procure.

Each department in charge of a member of the State Board of Agriculture selected on account of his fitness for that work, each class of products or exhibits in charge of a specialist in that line, and the awarding judges specialists in their lines, and some of them men of national reputation.

In the horse department we find twenty-two breeds and classifications.

In cattle eleven different breeds.

In sheep ten breeds or classifications, in swine ten breeds or classifications, in chickens sixty-one, ducks nine, geese five.

I will simply name the other departments.

Agricultural implements and machinery.

Merchants and manufacturers.

Woman's departments.

Merchandise, music, etc.

Each of the last three occupy a separate building, covering one half acre of ground, and two of these buildings having two floors.

Department of fine arts.

Let us pause here a moment and note a few of the contents.

Are you interested in ornithology? Here is a collection of all birds found in Ohio. It is the triumph of taxidermy. The same can be said of fishes; an educational display of school work, works of art, and mechanical drawings. Here one could profitably spend hours, but we have not the time.

Let us go to horticultural hall in which are three departments that I have not yet named—agricultural, horticultural and floral; also the honey exhibit and maple exhibit. Here is an exhibit of maple products made by the same association of manufacturers that secured the first premium at the Columbian exposition at Chicago.

Do you desire a knowledge of weeds that interfere with your farm work? The state experiment station has them neatly arranged and labeled with both their botanical and common names.

Are insects rendering your labors profitless on the farm? Here they are with their entomological names, oftentimes more formidable than the insect itself, and their common names. Their life history is given and the methods of destroying them. Here are shown matured fruits that were sprayed to prevent the ravages of insects and fungous diseases, in comparison with the unsprayed fruits. A comparative yield of varieties of potatoes is shown and you soon conclude that there are many of them that no gaudily illustrated catalogues or alluring descriptions will tempt you to plant. In this same connection is also shown the result of extensive fertilizer tests on potatoes with the cost of the fertilizer used and the increased or diminished yield.

THE AGRICULTURAL EXHIBIT

is displayed on tiers running along the sides and south end of the building and consists of all the leading varieties of cereals and vegetables grown on the farm and garden. These are selected by experienced growers and collectors, and are tastefully arranged by skillful exhibitors working under the supervision of a competent superintendent. This exhibit includes individual entries and collections and county exhibits of agricultural products.

THE HORTICULTURAL EXHIBIT

is located next the middle aisles and occupies two spaces, each fifteen feet wide by two hundred feet long. The fruits are classified so that patrons of the fair may compare the different varieties, and may also learn how any of them succeed in different parts of the state.

Courteous attendants are always in readiness to answer questions, for it is intended to make these exhibits instructive as well as attractive.

With its varied soils and climate, Ohio produces as great a variety of fruit as any state in the Union. This is what enables it to make as fine a horticultural exhibit as is held at any other State Fair. The number of plates of fruit exhibited is usually between three and four thousand.

THE COUNTY EXHIBITS

in horticulture and agriculture in which county competes with county, not so much for the premium offered as for the honor of excelling, adds much to the beauty and character of the display.

THE FLORAL EXHIBIT.

In the very center of the building are streams of running water falling over a grotto, on which are growing ferns and other plants. To the north and south of this, reaching to the ends of the building, are long beds of rare and beautiful plants arranged by experts who have had many years of experience as superintendents of such displays.

The cut flowers are arranged on tables at one side of the main display of flowers. Among these are shown each year thousands of gladioli from the largest and finest collection in America.

HORTICULTURAL HALL.

The farm products, fruits and flowers shown in this hall, would if compactly arranged in a row one foot wide, extend a distance of more than three miles, yet it is possible for one, by walking twice around the hall, to carefully examine any specimen in either department.

To stand at the end of this hall and look upon the vast array of products, each class a complement of the others, to see them with all their varied forms standing in strong relief and to note the harmonious blending of colors is to stamp upon the memory a picture that can never be effaced. It is a collection of nature's products suggestive of comfort, beauty and refinement that cannot be excelled.

There all classes of agriculturists have an informal reunion every year. There good will and sociability intermingled with exchanges of information is the order of the day. There friends meet annually with kind greetings and separate, wishing each other God's blessing till they meet again.

Friends, can you afford to miss these golden opportunities?

THE PROBLEM OF CHARITY IN CITY AND COUNTRY.

BY MISS HELEN G. MOOREHEAD.

[Read at the Greene County Farmers' Institute, held at Xenia, Feb. 7 and 8, 1896.]

Before beginning this paper, it may be well to state that it contains but very little original work. The facts and theories bearing upon modern charity have been collected from sociologists whose long experience and great talent gives them the right to command attention and consideration.

Especial thanks are due to Professor Herbert Mills, late of Cornell University, who has had wide experience both in this country and in Europe; to Mr. Ayers, late head of the Associated Charities in Cincinnati, and to the valuable work of James H. Hyslop, fellow of Johns Hopkins University.

The problem of charity in the modern world is vastly more complicated than people commonly suppose. Formerly it needed only two elements; on the one hand, the tender-heartedness of the giver; on the other, the poverty of the receiver. "Let us all recognize the beautiful impulse this work represents, an impulse which dates its historical beginning to the birth of Christianity." The time forbids to trace the downfall, the corruption of this first pure spirit. How the monasteries, feeding their hungry hordes every day; how a rich church, in a pure community, gradually pauperized every country in Europe. It was not until the passage of the new English poor laws, in 1834, that the last vestiges of these evils were in a way to disappear. And now, just as in the last fifty years our methods of trade have been so transformed by steam and telegraph that the sailing vessel to the Indies and the merchant's letter of advice seem like ancient history, so the whole problem of charity has been transformed. A community ought to be just as willing to adopt the most scientific and advanced methods in charity, provided they are good, as to adopt the electric light or the telephone.

The problem of poverty is one of the darkest which modern civilization has to face. The sociologist makes a keen distinction between poverty and pauperism. He uses the latter word in a peculiar way, never applying it to those persons who show a disposition to help themselves, who are made destitute by sickness, lack of work, or insufficient wages. So that it is really the problem of pauperism which concerns us. What are some of its causes?

These causes are gathered from the reports of the Associated Charities in Baltimore, Boston, New York, Chicago and Cincinnati. Incapacity for work, and inefficiency are the most common ones. Intemperance ranges but from one-fifteenth to one-fifth per cent. in producing pauperism, immorality being a far more potent factor; thriftlessness and laziness must also be added to our list. Last of all, a very important cause lies in the homely old saw, "Poor folks have poor ways." There is a sad lack of wisdom shown in the common affairs of every-day life, and very often a lamentable want of common sense. Perhaps these people cannot be expected to have much judgment. But in the use of money, in laying up a few dollars for a rainy day, how woefully little there is! Then the children in such families have no home life; they come to regard abject dependence as a natural thing. In a few years, there is another generation of paupers. Then in this class, intemperance is a frequent cause of poverty. Accidents are common, and sickness is one of the most powerful factors in producing such a state of affairs. And so we have the typical pauper family, living from hand to mouth, and dependent on charity. In factory towns like ours, enforced idleness through the periods when the mills close down is a large factor. Of course the greatest number of paupers comes from the class known as unskilled labor. It is with this class that our own town has largely to deal. And it may be said in advance that the problem of unskilled labor is one of the most difficult which ever confronts the charity worker. By unskilled labor is meant that class which can never do much more than to break stone, or sort over waste. These people must of course have relief. But there are many ways and methods of giving. What relief is best and wisest? The principle underlying all charitable work is loving kindness. Scientific organizations cling to this as their watch-word, though their motives are often misunderstood. And in this motto of loving kindness may be expressed the ambitions and desires of every faithful charity worker.

We will first consider the provision made by the city for its poor. As we all know, the public relief is largely vested in the hands of the township trustees.

Then there is the county infirmary, the indigent soldiers' fund, the G. A. R., the Woman's Relief Corps, the Benevolent Association, and each church (of which there are fourteen in the city), tries to care for its own poor. In addition, there is always individual charity.

The people of our city and vicinity are noted for charitable and benevolent works, and we are rightly proud of the fact. Now, let us look a little, and see just how much we spend. Our population may be estimated between nine and ten thousand people; perhaps it would be best to say ten thousand, and then we shall err on the right side.

The figures given have been carefully taken from the city books. Those for 1895 cannot yet be obtained:

In 1890, for public relief, was expended.....	\$4,431 00
In 1891, for public relief, was expended.....	8,024 00
In 1892, for public relief, was expended.....	6,273 00
In 1893, for public relief, was expended.....	6,214 00
In 1894, for public relief, was expended.....	7,653 00
In 1894, from Indigent Soldiers' Fund.....	\$1,200 - 1,500 00
From G. A. R. and W. R. C., approximately.....	150 00
By the Benevolent Association.....	200 00
Approximate individual relief and churches.....	1,000 00
This does not include the County Infirmary, which was, in 1894, about	2,300 00

Hence, we have our total, for public and private relief, for 1894, exclusive of any other organizations which assist their members, of twelve thousand five hundred and three dollars. These figures teach their own lesson. From taxation alone about seventy cents an individual is allowed to our population.

The money raised by the city goes for out-door relief; this means coal, groceries, doctors' bills, shoes for school children, clothing and funeral expenses. Striking off these last three items, for which about two thousand dollars a year is expended, we can then say that the remainder, five thousand six hundred and fifty-three dollars, was expended entirely for out-door relief.

There is not a person here to-day who, in some way or other, does not perform work. Women have the cares of a house, and responsibilities which are much more trying, which require much more strength of character than we might suppose. The gentlemen present must perform mental, if not manual labor. We are glad and proud to belong to the great army of the world's producers; we would not be idle consumers if we could. And yet, we put a premium on vice and idleness, and sometimes crime, by helping the worthy and unworthy alike, and by giving public out-door relief for which we do not get an equivalent in sound, honest, hard work.

I know that as a rule the officials who administer public out-door relief use their best judgment, and fulfill their trust. But it is the fault of the system, and nothing else. A system so pernicious—this giving something for nothing—that the great cities of Brooklyn and Philadelphia cut it off long since with scarcely a day's notice. And then what happened? Were there not long lines of starving wretches besieging the windows of private charities? Nothing of the sort occurred. For a few months there was an increased pressure on private charities; but they had organized, formed the Associated Charities, in anticipation of just such a demand. That is how the first Associated Charity Society in the United States, in Buffalo, New York, came into being. Only for a few months did the increased demand continue. It soon shrank to a very small figure, and so continued.

Why do the large cities and progressive towns abolish public out-door

relief? Because, more than anything else, it pauperizes people. All summer long the pauper basks in the sunshine of constant expectation, neither toiling nor spinning. When winter comes, the county sends coals and groceries, and he has free soup. Take a swarm of bees to a tropical country; they soon discover that winter never comes. They change their habits and cease to lay up honey.

In this connection some experiences of towns that tried free soup-houses may be given. In Louisville, Ky., in the hard winter of 1893, people wondered what was to be done for the poor. I quote verbatim from their report, which says:

"Shall there be relief to the able-bodied without work? No, was the unanimous response. Should there be free soup-houses? Emphatically no! was the conclusion on this point. Experience had taught that relief without work was demoralizing, and that free soup-houses were vicious."

In the second place, out-door relief soon passes from a temporary to a permanent arrangement. During the floods in Cincinnati, a member of the Associated Charities says, many families were given provisions who had never before had aid. The next winter, with scarcely a single exception, these families came for assistance. Constant supply is sure to create a demand.

Third—A willing pauper is very near a thief.

Fourth—It requires an amount of discrimination in cases, that is practically impossible when the work is done by public officials.

Fifth—Orders calling for the necessities of life may be good for the luxuries.

Sixth—Out-door relief is very expensive. There is almost always a deficit in the fund. Let us see just how much it costs us per capita, allowing for a population of ten thousand, that we may err on the right side.

In 1894, we expended seventy-six cents per capita for out-door relief alone. The city of Boston spends twenty-five cents per capita, New York City forty-three cents, Chicago twenty-two cents. It is but fair to say that for the eight months of 1895, out-door relief has been reduced in our city more than one-half. We have, therefore, a probable cost per capita of thirty-eight cents for this year.

These figures tell their own story. But the most significant lesson of all is, that while our city out-door relief has been reduced more than one-half, no one has starved to death in our midst nor has there been any unusual distress.

It is impossible for officials, however conscientious they may be in performing their duty, to relieve without investigation, and not help the worthy and unworthy alike. It is not their fault; it is the fault of a system so bad that our State of Ohio enacted a law about two years ago. The law reads, that any able-bodied man who has received aid, has to work on public parks or highways under the direction of a competent official until the debt is discharged.

As I have said before, if out-door relief were abolished in our town, the demand would have to be met by a thoroughly organized charitable society. I do not suppose out-door relief will ever be abolished in Xenia. We shall continue to carry this constant load, as one of our poor officials terms it, costing anywhere from six to eight thousand dollars a year.

But dropping this, let me ask if we need an Associated Charity Society in our town? In the smaller places it has been found best to adopt a modification of the Associated Charities as found in large cities, and to call it "The Charity Organization Society."

Can it be that we have instances of constitutional pauperism which impose upon a generous public? I will read just five cases. I could read twenty, but will not tax your patience so long.

a) It has not been uncommon to see thirty able-bodied men in the township clerk's office, waiting for orders.

b) A certain man had some property left him, on which was owing a few dollars. He sold out his interest, bought an old horse and wagon, and took his

family on jaunts through the country in summer, returning here in the winter. He probably appreciated the remark made by one of our well-known business men, "Xenia is a good place for poor folks."

c) A certain family got six orders at one dollar and fifty cents an order, by sending out different members. They were discovered sitting together at one table, feasting on the luxuries obtained by their combined and honest efforts.

d) A man received one hundred and eighty dollars back pay. He bought a gold watch and solid gold bracelets for his wife, and so spent every cent. He has twelve dollars pension a month, four dollars from the Indigent Soldiers' Fund, and help from the trustees, yet his family sent in an urgent call to the Ladies' Benevolent Association.

e) A woman reported that her son, twenty-five years of age, was ashamed to hunt work on account of his clothes. After three successive calls, armed with a large bundle of clothing, the visitor concluded that a suit which was good enough to loaf in, would also answer for working purposes.

These cases have a plain moral.

The Charity Organization Society has five objects:

1. It acts only upon knowledge gotten through investigation.
2. To relieve worthy need promptly, fittingly and tenderly.
3. To prevent unwise alms to the unworthy.
4. To raise into independence every needy person, where possible.
5. To make sure that no children grow up to be paupers.

Its rules are few and simple. (1) Every department of its work shall be completely severed from all questions of religious belief, politics and nationality. (2) No aid shall ever be given without thorough investigation. (3) It must encourage thrift, self-dependence, and industry, through friendly intercourse, advice and sympathy, and help the poor to help themselves. It must try to raise the needy above the need of relief, prevent begging and imposition, and diminish pauperism. (4) The society shall appoint a board of friendly visitors, whose duties shall be to be friends indeed to the poor families which come under their charge; to elevate the home life, teach cleanliness and thrift.

I believe that with a little help from the town, and from the funds which the people of Xenia so generously give, such a society could do much toward solving our difficult problem of charity. The experts to whom I have written say that our condition is unusually complicated. We have a colored population in the East End, and a colony of unskilled labor in the West End.

If we do not approve of organized charity in our town, there are a few practical points to be remembered. That it is as unkind as dangerous to give something for nothing, our poor officials will be the first to admit. That money should never be given directly to poor people. For half of what we spend for out-door relief, we could have a fine work-room and wood-yard, where every one who wants an honest living should be able to obtain it. In regard to the many paupers who live like parasites on the tax-payers of our community, there is no better guide than the wise precept of Scripture, "If a man will not work, neither shall he eat."

In this connection, the generous plan of one of the infirmary directors, by which he gives a load of wood to any one who is willing to cut it, cannot be too highly praised.

It is the duty of every man and woman to help the poor in heart, in mind, and in estate. To *help*,—but it is criminal to *pauperize* a single human being.

● We will now glance briefly at charitable work in the country. The poor people with whom those who dwell in the country have to deal may be divided into two principal classes: Ambulancers and tramps.

That floating population which travels through the country in wagons is called *ambulancers* by Mr. Flynt, and I have adopted his classification for want of a

better name. They are unusually numerous throughout Ohio; and when they reach a town or hamlet, the children are sent out to beg. The thrifty housewife cannot resist their appeals, and we honor her generosity. Let us look at the lives of these people, and see what they do with the alms given them. Most of them are inconceivably vicious; they deprive their children of all educational advantages, and trade on a generous public. The best plan is to require some labor from the head of the family in return for a supply of food.

Experience is a severe mistress, but she is perhaps the most capable of all the instructors to which the sons of men must submit. No where is practical experience of more value than in charitable and philanthropic work.

So when a Boston philanthropist wished to study the tramp problem, he took to the road in good earnest for eight months, and became an active member of the brotherhood of tramps. A large brotherhood, for it comprises an army of fifty-nine thousand nine hundred and ninety-nine men, for the most part stalwart and young.

The reasons which Mr. Flynt gives as to why men become tramps, are as follows:

1. The love of liquor. As to this he says: "If the tramps of America could be freed from the bondage into which whisky has brought them, there would not be very many vagrants in the country."

2. The county jail, owing to the promiscuous herding of boys and homeless wanderers with criminals.

3. The tough and rough element in villages and towns.

4. The comparatively innocent but misguided pupils of the reform school.

There is not space to quote largely from his interesting account about tramp-camps in the woods, where to fifty vagabonds there are twenty empty beer kegs lying around in the grass, and how a skillful tramp can beg from fifty cents to two dollars and fifty cents a day, averaging a dollar.

"I once attempted," says Mr. Flynt, "to see just how many dinners I could get inside the ordinary dinner time, and in just an hour and a half I returned to the hang-out with three bundles of food, besides three dinners already disposed of. I could have continued dining indefinitely, had not my capacity been limited."

Work is the last thing a real tramp ever means to undertake. For every voluntary vagrant, there is a voluntary taxpayer.

It has been aptly said, that the American people can have just as many tramps as they will pay for.

But there is something to be said on the side of the people. How cruel, how hard it seems to send any one away without giving something to eat. But the trouble is with the indiscriminate giving; it would be inhuman to refuse aid to the sick or the old, but certainly a distinction ought to be made in regard to strong, able-bodied men. In charity it must never be forgotten that to give something for nothing is very harmful, both to the recipient and the donor. Good, honest work, for which equivalent wages shall be paid, is the best thing to furnish. When people realize that indiscriminate giving is almost as bad as not giving at all, our charities will be on a much sounder and saner plane.

Some points may be given which will suggest perhaps the practical solution of this tramp problem:

1. Stop lodging tramps in police stations. Since the citizens of Springfield, Ohio, have adopted the plan of giving tramps tickets, which they take to the labor-yard, where in return for honest work they get a good meal, the number of tramps has diminished more than one-half. If such a plan could be pursued in our city, instead of the disgraceful show of five hundred and ninety-four tramps lodged in the police station during one month, we should perhaps have something like seventy-eight.

2. If we must keep them in the police stations, separate them from the criminal section.

3. Adopt a careful system of registration.

4. Wherever these people are lodged require labor of some kind as an equivalent. Why should a man be allowed to spend what he has begged or earned, and then be taken in for free lodgings at public expense?

5. Let communities or counties join together and establish labor stations where every honest applicant may find temporary occupation and not be obliged to choose between starving, begging and stealing.

6. Let them join also in founding places of detention, under whatever name, to which incorrigible vagrants may be committed for indeterminate periods, and where they may both learn to work and overcome the habit of idleness. It is a habit easy to acquire and hard to get rid of.

Never give money to beggars, or to poor families. There is almost always a sense of degradation which accompanies the gift, and too often it is entirely wasted. See that good, suitable clothing and provisions are furnished, but never give money. We do not need more charity, but it does seem as if we needed better directed charity. It is easier to send a load of wood to the needy, than to go and investigate their true wants. Not alms, but a friend, should be the motto of every charity worker. Which is easier, which calls for more loving kindness, a few visits, the leaving of a few orders, or the constant watching over a family, summer and winter, teaching self-respect, cleanliness, the careful use and preparation of food? These may seem small points, but the happiness of the home depends on them. Individual effort is what we need, the patient work which, with tact, and not scolding, remembers that the poor man's hovel is as dear to him as the rich man's drawing-room, and works accordingly. We live in what may be called a notably Christian community. But it cannot be that people know what sordid and wretched lives their poor brothers and sisters lead. Where are our clubs for boys and girls? Where is our industrial school, and where is our work-room, where such articles as the poor can make, are placed on sale?

Says Dugdale: "I am informed that twenty-eight thousand dollars was raised in two days to purchase a rare collection of antique jewelry and bronzes recently discovered in classic ground, forty feet below the earth. I do not hear of as many pence being offered to fathom the depths of our civilization, however rich the yield."

Does not a splendid, noble work lie in the grasp of every man and woman,—the faithful exercise of a loving charity that shall help the poor to help themselves? As the state rests on the family, so charity depends on individuals; and the more they freely give their best, the sooner shall we see charity as wise as it is beneficent.

FREE RURAL MAIL DELIVERY.

By O. E. BRADFUTE, CEDARVILLE, O.

[Read at the Greene County Farmers' Institute, held at Xenia, Feb. 7 and 8, 1896.]

It is scarcely worth my while to attempt to show the advantages derived from a daily mail in the country districts; they are conceded by all. The one great advantage that the cities and towns have over the country is in the matter of mail. Overcome this difficulty and you will largely overcome the rush of the country population to the towns and cities.

There is no one class that really requires a daily mail more than the farmer. There is no one who requires so wide a range of knowledge as the farmer. The farmer loses thousands of dollars every year because he has not access to a daily market report when he most needs it.

The stockman who is situated a distance from the postoffice is at a disadvantage compared with him who receives his mail daily.

This is an agricultural nation. The majority of the wealth produced by the nation is produced by the farmer. Eighty per cent. of the exports of the nation is produced by the farmer. Our imports are paid for by our exports. The greater part of the revenue to run the government is raised by a tariff on our imports. Therefore, it is safe to say that the farmers pay eighty per cent. of the running expenses of the government. If, then, the farmer pays the larger part of the running expenses of the government, why should he be the last one whose benefit is to be considered?

There is no class of people who so quietly sit back and "pay the fiddler," while the other fellow dances, as the farmer. Both sides seem to enjoy it, too. Let the farmer demand his rights.

I am told that free rural mail delivery is impracticable. One of the most thoroughly practical business men this government has ever had at the head of the Postal Department did not think so. Let me quote from General Wanamaker who did so much to prove that it was not only practical, but unjust that it should not be put into use. In his report of 1892 he says on the subject of country free delivery:

"A joint resolution of Congress, approved October 1, 1890, authorized the postmaster-general to test 'at small towns and villages' the practicability and expense of extending the free delivery system to offices of the third and fourth classes, and other offices not now embraced within the free delivery. The sum of ten thousand dollars, to be taken from the amount appropriated for free-delivery service, was appropriated for the experimental service. This departure was at once successful. The ten thousand dollars appropriated yielded net proceeds of over three thousand six hundred dollars, due to the increased business that was caused, and the salaries of the postmasters of the offices experimented with were raised in the aggregate over one thousand nine hundred dollars. For a similar cause the departure was so popular that when it was feared that the appropriation might not be continued by the Fifty-second Congress, private arrangements were made by the people in more than one of the affected communities by which the service should be continued, whether or no; but the appropriation of ten thousand dollars was granted and the experiment, it hardly needs to be added, continues to be successful.

"The forty-six communities experimented with varied in population from three hundred persons to five thousand, and while it has been village free delivery and only rural as it reached out into the surrounding country, the expectation has been that the very general extension of the system would be permitted and that a free delivery gradually leading up to universal might be put well under way. If anything is to be done outside of the large cities and towns beyond carrying the mail bags to the postoffices and there emptying them (for the people to look out for their letters as convenience permits them), it would seem that no better method of beginning could be found than the present one. Indeed, the popularity of the experiments and the sound business results prove this. The old system is really colonial. It takes pay for delivering letters without delivering them. It obliges people to go or send for mail, and that means, in the winter or stormy seasons and for families of aged people, the deprivation of going without letters and periodicals (hardly less valuable) that lie in postoffices for long periods not called for. We shall look back with astonishment before many years that the present system had to be suffered so long.

"The concentration of labor which would be involved in the employment of one person to do what formerly required perhaps fifty to do is a great business advantage to the rural dweller. It is a great business advantage to the local paper to obtain regularity and economy in its daily service, to the city weekly or the daily, and even to the periodical. It would mean even more than this to the social life, for correspondence would be stimulated and reading would be encouraged, and the long evenings lightened and the long working days brightened. The farmer receives his periodicals, his prices current, his special information that he desires. The grown-up children stay at home more readily and the old place is every way made happy. The family is in touch with the rest of the world.

"The experiments have mainly related to villages, to be sure, but it has been a daily service and it has cleared a profit. It is easy enough, therefore, to say that the free delivery can be inexpensively extended further and further; and it ought to be done, whether it pays a profit to the Department or not. As the frequency of the deliveries increases and the service seems to pay its way, if a daily visit is too expensive, let the service begin with a tri-weekly or semi-weekly service; only let it begin. The agitation for good roads would be quickened incalculably, for wagon and horseback travel would not only of necessity have to be made more easy, but the bicycle would be brought into requisition. Good roads as well as frequent and regular mail facilities mean a more rapid settlement of the country and enhancement of values and a local and widespread prosperity.

"The continued experiments, if they can now be called such, have been as successful as at first. I hardly see how the service can justly be discontinued. On the contrary it would be wise to increase the number of country free-delivery offices by at least one thousand each year for the next ten years. With the added privilege would come a new impetus, and all of the cities, which are all so much dependent upon the country neighborhoods, as well as the towns and the farming districts, would be supplied the sooner with a simple, business-like, almost necessary, postal facility."

I have quoted at some length from General Wanamaker, but I know of no one so well qualified to speak on this subject as he.

I hinted in the beginning of this paper that the present system is an unjust one. How is it that a government of the people, for the people, and by the people, can afford to give special postal advantages to a part of the people while the great majority have only such advantages as result from private enterprise.

The fortunate dweller in the cities not only has his mail delivered to him several times a day by servants of the government, but he finds within easy reach boxes where he may deposit the letters and packages which he sends through the mails.

We can see why all this is desirable, but we cannot see why the general government should display such remarkable partiality. The dweller in the city is the object of the most distinguished courtesies of the government so far as the postal service is concerned, whereas the citizen who lives in the country has to shuffle along in the old way, and be content with getting his mail once a fortnight. In order to look more closely into this phase of the matter, let us use the Xenia office as an illustration.

No one has any desire to see the system taken away from Xenia, but we only hope the good people of Xenia may the more appreciate the advantages they receive largely at the expense of the country people who patronize this office and that they may the more earnestly join with us in the effort to have the system more generally extended. Xenia does not differ from a thousand other free delivery offices of the country.

Is there any just reason why the man of leisure living within a stone's throw of the postoffice should have his mail delivered at his door three times a day, while

the laboring man of the country who, perhaps, receives several times as much mail, must lose one, two or even six hours and go for his mail each time he wishes it, and at the same time pay one cent extra postage for each "drop letter" which he mails at this office?

Also, is there any just reason why this same country man should pay one dollar per year box rent in order to get "Uncle Sam" to keep his mail for him until he can get time to go after it, while in other offices of the country where free delivery does not exist the box rent charged is only forty to sixty cents per year?

Is there any reason why a carrier in Xenia should receive eight hundred and fifty dollars per year, while the man who carries the mail from Xenia to Fairbaird, a distance of twelve miles, and furnishes his own horse and wagon, should receive less than two hundred and fifty dollars per year, or only a little over one-third as much? Which job would you choose, even if the price were the same? Our whole mail service is full of such inconsistencies.

But I am told that rural mail delivery would be too expensive. General Wanamaker does not think so. It has not proven so where it has been tried. Take Greene county for example. It is an average county, at least in the density of its population, and the quality of its roads. There are in Xenia township just one hundred and eight and one-half miles of country roads. It is not expected that every mile of this road would have to be gone over each day. The entire township could probably be covered with eighty miles. The entire county could likely be covered with eight hundred miles or less.

By reference to the report of the second assistant postmaster-general for 1892 we learn that the average star route is nearly fourteen miles in length, or going and coming a distance twenty-eight miles.

From the same source we learn that the average cost per mile per year for those routes is twenty-two dollars and ninety-two cents, or nearly twenty-three dollars. If we count the route both going and coming it is only eleven dollars and fifty cents per mile each year.

These figures are based on the actual results all over the United States, and include an immense amount of territory where there are no improved roads at all.

More than that, one of the routes in this very county is actually carried at a trifle over ten dollars per mile each year. Taking the government average of eleven dollars and fifty cents per mile per year as a basis, the entire one hundred and eight and one-half miles of Xenia township could be covered for the sum of one thousand two hundred and forty-seven dollars and seventy-five cents per year.

Surely the good people of Xenia would be willing to put up with one mail a day in order that their country brethren might have equally as good a thing. In this case they could dispense with two of their carriers, which cost one thousand seven hundred dollars per year. Add to this the sum of five hundred dollars or more paid for box rent and you have two thousand two hundred dollars for mail delivery of Xenia township, or a surplus of nine hundred and fifty-two dollars and twenty-five cents to aid in delivery over the rest of the county.

On the same basis, delivery over eight hundred miles of road in the county would cost nine thousand two hundred dollars, a sum by no means out of reason, when we consider the largely increased revenue accruing from a daily mail in the country, which has proven to be very much more than might at first be supposed by the experiments already tried by the government. Then add to that the saving to the department by doing away with many small offices throughout the county, which would no longer be needed, and free rural mail delivery does not seem so unreasonable after all.

If we allow a cost of twelve thousand dollars per year for delivery of the mail throughout the county outside of Xenia, the average cost per capita for the twenty thousand persons would be sixty cents per year.

By referring again to the official report of the Postal Department, we learn that the average cost per capita in the cities where free delivery exists is forty-one and one-half cents per year.

Don't it look a little as if free rural mail delivery might be a possibility? Is there any one here who thinks he can go six, three, or even one mile after his mail for sixty cents a year?

There is hardly a postoffice in the county that is not now being run at a profit to the government. The office at Cedarville may be termed largely a country office, yet it turns over to the department an average of about one hundred and eighty-five dollars per quarter, or seven hundred and forty dollars per year above all expenses for running the office. In addition the Cedarville office handles all the Clifton mail, that yields a revenue of about two hundred and fifty dollars per year, without getting any additional credit for it. If this one thousand dollars could be used by the Cedarville office it would go a long way towards distributing the mail throughout the township. Several other offices of the county show almost an equal account.

In the spring and summer of 1891 the Postmaster-general, in order to test the matter of country free delivery, established free delivery at forty-six different offices in thirty-one states. The population of the various communities ranging from three hundred to five thousand. The success of this experiment was little less than startling. For the last three quarters of 1891 and the first quarter of 1892 the total cost of carrier services for the entire forty-six offices was eight thousand four hundred and twenty-eight dollars and twenty-seven cents, while the actual increase in the net receipts of those offices, due entirely to the free delivery system, was eight thousand five hundred and one dollars and seventy-two cents, or seventy-three dollars and forty-five cents more than the carrier service actually cost. "The proof of the pudding lies in the eating," so these results, based on an actual test by the government, need no comment.

Even if free rural delivery did not prove self-supporting, that does not alter the case. The postoffice is a public educator the same as the public schools. It is a convenience like the weather bureau. None of the various departments of the government are self-supporting, yet who would advocate the abolishing of those features of the government for that reason?

If the postal service were a private enterprise, run for the money there is in it, the policy of the government might be justified, but the object of the postal service is not to make money for the government. It was instituted for the benefit of all the people alike, and it was never intended that it should pay a revenue into the treasury, but we have not yet been informed why the government employs all its resources to give a fancy mail service to the cities, while the old colonial system still remains in the country.

Our country, while foremost in most things, is far behind in the matter of rural mail delivery. If the postal authorities of the United States cannot devise better features for the farmers than those in use in England and throughout Europe they ought to, at least, imitate them.

In England, whose postal department is self-supporting, there is maintained a free postal delivery throughout town and country. Deliveries are made twice daily and every house in the whole land is passed and visited at least once each day by the postman. No farm-house, however remote, but has its mail delivered directly at its door and its letters also taken away by the postman. Many of the carriers employ tricycles, furnished by the government, to make their rounds. Numbers of the carriers are mechanics who follow their trades between the morning and evening deliveries.

In France the system is almost equally as good, and in certain districts the post runner even uses stilts to hasten the mail over marshes to the farmers.

Throughout Germany there are mounted rural posts and postal stations,

numerous, well managed and cheap. The traveling German post makes himself known by guttural horn.

The rural post of Switzerland has bell or horn. Letters are presented at farmers' doors or left at stations in villages, where agents know exactly at what hours he will arrive and depart.

Even in countries less commercial and less thrifty we find better exemplars than the present system of American rural posts.

In India there is a post runner who, his bag on his back, prods his way with a spiked stick through jungles, while his clamorous bells frighten off reptiles and warn the villagers or farmers of his coming. Where camels are necessary, they stride the desert with their swinging bags of mail, their driver brilliant in uniform and loud with his warning bell.

In Japan the physical character of the country and the placid temper of the people make the swift runner satisfactory throughout rural parts.

Even in China there is a better rural service than we have. A runner hurries from station to station, a bell or bugle announcing his approach, and messengers are ready from all around the farms to receive and deliver mail. A letter addressed to any one of the four hundred millions of the people of China will be delivered to that individual in person.

Is it not high time that the farmers of the United States demand their rights and insist that this is a government not only of the people and by the people, but also for the people, and that they, the farmers, constitute a goodly portion of that body called the people?

MAN'S DUTY TOWARD ANIMALS.

By MISS ELEANOR BLOCHER.

[Read at the Farmers' Institute, held at Wooster, Wayne County, Dec. 9 and 10, 1895.]

In an old city of Italy the king caused a bell to be hung in the public square and called it the bell of justice. He decreed that anyone suffering wrong could ring this bell and the magistrates of the city must immediately assemble to redress the grievance. In course of years the lower part of the bell rope rotted away and was replaced by a wild vine. One day the magistrates, on answering the summons, found there an old, abandoned horse. To keep from starving it had tried to eat the vine rope and thus rang the bell of justice.

A part of the only real magistrates of our nation are before me to-night, and the bells of justice must be rung in your hearing, not for one animal only, nor for one class of animals only, but for the animal world. So I come to you to-night as spokesman for these mute animals to present their wrongs and ask you to redress their grievances.

The Bible says, "The whole creation groaneth and travaileth in pain together until now." Let us verify this by comparing the Bible's estimate of animals with our treatment of them.

"Are not two sparrows sold for a farthing and not one of them falls on the ground without your father." Are not five million song birds annually slaughtered to ornament women's bonnets? Are not the small birds flayed alive that the feathers may retain a firmer hold on the skin? By the estimate of Hudson, the naturalist, every egret plume worn costs the lives of ten birds, for many of the wounded birds cannot be found in the long grasses of Florida. While, as the egret plume is only worn at the brooding season, many nestlings starve in their motherless homes.

"The Lord knows all the fowls of the mountains and gives food to the young ravens when they cry"; while at our hands our domesticated fowls often suffer from lack of water if not proper food, and are so poorly sheltered that the end of winter finds them with toes and combs frozen off.

"The Lord is good to all, and his tender mercies are over all his creatures." Man seems to be cruel to all, from the kittens, which instead of being humanely killed if too numerous are set adrift when still too small to earn a living, to the dog who

"Though treated ill
Comes near and fawns on his master still,
Because the love these dumb things know
Is more than human, more faithful, more true."

Just outside of the city limits, only a few yards from my home, one of these animals, who by its faithful, unselfish friendship had a power "to wake a joy that enters eternity," was intentionally shot by a man who then heaped a mass of debris on it and left it to spend two or three days dying in its foodless, waterless, friendless, living grave. The Book of Wisdom says, "The dark places of the earth are full of the habitations of cruelty." Perhaps in Wooster even the brightest places are full of the habitations of cruelty. What think you?

One of the cows brought last year from a farm out of Wooster fell to the ground in front of the laundry on Beaver street. To compel it to go on a fire was kindled under its nose as it lay groaning on the ground. So piteously did it moan and move its head from side to side to escape the fire, that the perfectly reliable eye-witness from whom I have the facts, left as she could endure the sight no longer.

But had this animal escaped such barbarities at our hands it would most certainly have met them in transportation. Mercilessly are the cattle goaded with the long poles pointed with sharp iron; goaded into the over-crowded cattle cars, the small animals often crowded below larger kinds, and when from the jerking of the train or exhaustion they fall, often to crush the small animals below. They are goaded on to their feet again, until from such repeated goading their hides are punctured so full of holes that they are almost worthless for leather. Yet if farmers and shippers would demand it the railroad companies would be compelled to adopt the compartment cars now introduced in England, and how much better all would be.

The horse seems to be the favorite animal in the Bible; eighty-eight times is it mentioned, oftener than any other one animal. Then why do we treat them more cruelly than other animals? Do you doubt that we do so? Then tell me how many horses do not suffer from some of the things I shall name: underfeeding, improper shelter, careless grooming, lack of care in sickness, over-loading, over-driving, bad fitting harness galling the body into sores, harsh words, cruel blows, not to mention the useless blinders. These were first employed to cover up a defect in the eye of a valuable horse; then were kept in use as being a good place to display the coat of arms of the English nobility. What they are now used for I leave you to tell. Not for beauty certainly, for no piece of leather can equal the beauty of a horse's eye; nor for use, I judge, for a horse has its eyes in the sides of its head and was intended to see in that direction. "Hast thou given the horse strength? Hast thou clothed his neck with thunder?" This is the Lord's work; ours has been to clothe his neck with the tight check-rein and so diminish his strength by making it impossible for him to put his muscles and weight in a comfortable or favorable attitude for work. I condemn the tight check-rein and so also have five hundred veterinary surgeons of first rank in England, who signed a petition condemning

it as useless, cruel and productive of disease. In regard to the excuse usually given for its use, that it prevents stumbling, Wm. Pritchard, President of the Royal Veterinary College of London, says, "Tying one part of an animal's body to another does not keep him on his feet. One might as well say that tying a man's head back to a belt around his waist will keep him from falling." This is also proved by the fact that when a horse falls his check-rein is nearly always broken. Neither will I speak at length of the greater cruelties of the curb-bit and docking, for thanks to the small size of our town and the good sense of it and the surrounding country, very few curb-bits or bob-tailed horses are seen. But when we do see a man driving a horse with a docked tail we may know that he is either profoundly thoughtless, deplorably ignorant, or miserably cruel, and in no case excusable for the suffering which his whim has caused his horse, when in docking the spinal cord in the tail was sawed through. This causes such distress that one hundred and two well-defined cases of lockjaw were reported in one year to the Society for the Prevention of Cruelty to Animals in London, with a certificate in each case from the attending veterinary surgeon stating the cause to be docking. But the torture is lifelong, for the horse is ever afterwards a defenseless prey to insects.

I will spare you from hearing what animals have to endure in that cruelest of cruelties, vivisection, when while living they are passed through the vivisector's nine circles of torture, consisting of mangling, artificial disease, poisoning, suffocation, burning, freezing, starving, flaying and varnishing, and last of passing dogs through as many as possible of these tortures without causing death, caressing all the while to prove that they will show signs of love for their torturers to the last. Do not imagine this is something at a distance. One Ohio man has butchered 9,000 animals in his experiments. A neighboring town has already had to answer the question whether physiology shall be taught in its public schools by experiments in vivisection. The question answered negatively by them, will doubtless sooner or later come to you. If so, will you not remember when making your decision that

"A man of kindness to his beast is kind,
But brutal actions show a brutal mind.
Remember He who made thee, made the brute,
Who gave thee speech and reason, formed him mute.
He can't complain, but God's all-seeing eye
Beholds thy cruelty, and hears his cry.
He was designed thy servant, not thy drudge;
And know that his creator is thy judge."

Follow the example set by the young state of Washington, when by the voice of her people in law she said, "No vivisection in our public schools." But this state has recognized a deeper truth, one that we as loyal citizens of Ohio will do well to notice, that the hope of the future welfare of a state or nation rests not with the old or middle-aged, nor for the greatest part with the young men and women, but with the children; hence Washington has demanded by law not only that cruelty shall not be taught, but that for at least ten minutes a week every child in her public schools shall be taught kindness toward animals.

Is such training an experiment? Perhaps so in the United States; not so in all places. In Edinburgh, Scotland, seven thousand pupils have been carefully taught kindness to animals, and not one of them has ever been convicted of a criminal offense; while of two thousand convicts in our American prisons, of whom inquiry was made, only twelve ever owned a pet in childhood. Such statistics verify the words of Edward Everett Hale, "Man and animals are in the same boat; you can not promote kindness to one without benefiting the other." Catharine

Smithies has said, "To teach every child in the land to be humane is to prepare the way for the second coming of Christ." "When the wolf shall dwell with the lamb and a little child shall lead them."

Among the first things that we must attend to if we have a will to aid the cause, is to inform ourselves thoroughly. In doing this we need not depend entirely on observation but may draw upon that headquarters of humane literature, the rooms of Geo. T. Angell, 11 Milk st. Boston. If we can not like Anna Sewell, write a "Black Beauty" or add a sequel to Miss Saunder's "Beautiful Joe" we can spread the information found therein.

With this increase of knowledge and hence awakened interest we will be fitted to obey, every where and every when, the command of Scripture, "Open thy mouth for the dumb." Be it as teacher to teach mercy, as writer to write mercy, as public speaker to speak for mercy, as law maker to enact laws or as a minister of the gospel to make use of some of the numerous texts in which God has mentioned forty-eight different kinds of animals, sixty-seven varieties of birds, ten of fish, twenty-one of reptiles and seventeen of insects.

But the greatest advancement of the cause will come when parents so open their mouths for the dumb in their homes that Longfellow's description of the youthful Hiawatha will be equally applicable to their little Hiawathas.

"Of all beasts he learned the language,
Learned their names and all their secrets,
How the beavers built their lodges,
Where the squirrels hid their acorns,
How the reindeer ran so swiftly,
Why the rabbit was so timid,
Talked with them where'er he met them,
Called them Hiawatha's Brothers."

As actions always speak louder than words, we must not only avoid cruel actions but practice the small as well as large acts of kindness.

A proud king once planned to build a great temple to the Almighty, but as he intended to glorify himself by it, he would allow no one to assist. When completed he ordered his name placed in a prominent position on the temple wall; but an angel came down and erased his name, writing in its place that of a poor widow who for the glory of God gave a few wisps of hay to the horses which drew the stones.

"If we but stop a tear or right a wrong,
Or lift a fainting robin into its nest again,
We have not lived in vain."

WORK OF WEATHER BUREAU.

BY H. W. RICHARDSON, OBSERVER, WEATHER BUREAU, AND ASSISTANT DIRECTOR
OF THE OHIO WEATHER AND CROP SERVICE, COLUMBUS, OHIO.

[Read at Farmers' Institute, held at Port Clinton, Ottawa County, Jan. 15 and 16, 1896.]

This matter of weather, in all its varied forms, is a consideration of the highest importance to every one, especially the farmer; for it decides for him whether he shall plow, sow, reap or mow; whether his crops will be abundant or poor—depends largely upon the seeming caprice of this self-same weather, and it follows,

therefore, that information as to the probable conditions that will likely prevail on the morrow or during the season is anxiously looked for; and there are, in a sense, three great classes or divisions of weather—the past, the present and the future, all forming a ceaseless procession in the march of time.

Before indulging in any discussion of these three great branches of weather, it might not be out of place to bring to your attention a few facts of history. This interest in the science of weather dates back to remote antiquity. From the very earliest times of which we have authentic record the weather and its attendant phenomena have been studied by man; this is especially true of the ancient Phœnicians, Assyrians and Chinese, who made record of rain, wind and weather, pressure and moisture, in a primitive manner, of course, and with perhaps the element of superstition added. The invention of the thermometer and barometer during the sixteenth and seventeenth centuries, respectively, marked the real beginning of the application of science to the subject. The first systematic and scientific study of the weather occurred during the time of Galileo, when Ferdinand II, grand duke of Tuscany, organized a system of meteorological stations equipped with instruments—which latter have, of course, since then, been much improved upon, perfected and enlarged as to the number of elements measured. Prior to 1870 the science of weather was practically in its experimental stage, and was confined chiefly to observations at schools and colleges and here and there by interested individuals, and in a few instances observations were conducted under the patronage of European governments, and in the United States the pioneers as regards the practical applications and study of meteorology were Messrs. Redfield and Espy, Prof. Cleveland Abbe and the Smithsonian Institution.

It having become a well established fact (notwithstanding the ridicule and assertions to the contrary by an incredulous few among the men of science) that, the means being provided, weather on the morrow could be forecasted with a reasonable degree of accuracy, and for the further reason of the great value of a knowledge of climate as regards the well being of man in this country, led to the establishment, in 1870, of a meteorological bureau under the auspices of the army signal corps. The success of such an organization was apparent from the start. In order to increase its efficiency and to provide a greater scope for future work, the weather bureau was, by act of congress in 1890, transferred from the signal corps to the United States Department of Agriculture. This change has since proven to be most wise; the efficiency of the bureau has not only been increased in every way possible, but it has also been conducted at a less cost to the people than under its former army organization.

The weather bureau, by its system of forecasts, special warnings and other information issued saves to the citizens of this country millions of dollars annually as regards the agricultural and marine interests, and commerce and manufactures of all kinds.

The honorable secretary of agriculture in his annual report for 1895, among other things concerning the weather bureau, declares that warnings of cold waves alone secured from freezing more than two million two hundred and seventy-five thousand dollars worth of perishable agricultural products which otherwise would have been lost. The report has also this to say concerning the weather bureau: "The possibilities of usefulness to agriculture, manufacture and commerce are almost without limit in the increasing accuracy and capabilities of the weather bureau. The time is not probably far distant when its records, warnings and forecasts will be constantly in demand as evidence in the courts of justice and also by those purposing large investments in certain kinds of agricultural crops, in perishable fruits, in commercial ventures, and in manufacturing plants. Weather bureau forecasts in the not distant future will, no doubt, be consulted and awarded credibility just as

thermometers are to-day. The usefulness of the meteorological branch of the service, wisely and economically administered, is beyond computation."

Many of you will doubtless ask the question, "How are the forecasts made?" The weather bureau has about one hundred and fifty fully equipped stations located at selected points over the United States; the equipment of instruments at each station consisting generally of maximum and minimum thermometers, a hygrometer (wet and dry thermometer), an anemometer, anemoscope, sunshine recorder, barometer, barograph and thermograph, rain and snow gauges; many of the instruments being of an electrical nature and all self recording; a very few stations are supplied with special apparatus, such as telethermographs (electrically recording thermometers) and solar radiation thermometers. The majority of weather bureau stations just mentioned (together with most of those in the Canadian weather service, and which co-operates with the United States service) take two observations at the same moment of time daily (8 a. m. and 8 p. m., 75th meridian time) of the instruments mentioned, besides noting the kind, amount and direction of clouds and various other atmospheric phenomena. These observations are at once telegraphed to headquarters at Washington and other special stations where local forecasts are made. Ohio is well supplied with such stations and they are located at Cleveland, Sandusky, Toledo, Cincinnati and Columbus, respectively. Upon receipt of the telegraphic observations at Washington and other stations, the data is at once entered upon maps or charts of the United States and Canada. Lines are drawn connecting places of equal pressure and temperature, and the areas of "high" and "low" barometer are thus outlined graphically; the existence of warm or cold waves, rain or snow, clear or cloudy weather or heavy winds, etc., becomes at once apparent as regards any section of the country, and a study of the weather as outlined on these maps forms in reality the groundwork of the forecast. The experienced forecaster knows that certain conditions in one place ultimately produce certain results in another place: All decided pressure areas, whether "high" or "low" may, for convenience, be termed storms.

These storms or pressure centers ordinarily move in certain prescribed paths, and at a certain velocity, other conditions being equal, and the forecast for the morrow, is, in simplicity, based on the movement and change in character of the various pressure centers and their probable location during the period forecasted for; the forecast for one section being for fair and warmer, in another fair followed by rain and no decided change in temperature, while in an adjoining district the outlook may be for snow, followed by fair with much colder or possibly a cold wave; any of these and all other conditions forecasted depending upon existing circumstances and the time of year. Ordinarily the forecasts thus made up are issued to the public in about two hours after the observations are taken. Occasionally, conditions (of which the forecaster has no knowledge) arise and smite the storm and divert it from its original path; then everybody knows the weather man has missed connections. The percentage of accuracy achieved in making ordinary forecasts will average close to eighty-five, while ninety to ninety-five per cent. of the more decided changes (such as cold waves, frost and heavy storm warnings of wind, snow and rain) are verified. These figures certainly go far toward inspiring a high degree of confidence as regards the use of the information by the public.

The forecasts and warnings are issued to the public by means of maps or bulletins, telephone, telegraph, steam whistle, flag and by the newspapers; a recent experiment being by means of the "back" stamp on mail matter handled locally by a few postmasters. Ohio is without doubt the banner state as regards the dissemination of such information, nearly two thousand postoffices being supplied with the forecasts (daily except Sundays), and warnings when necessary, not to mention the large list of individuals, firms, corporations and institutions to whom

are sent the forecasts and warnings for display for the benefit of themselves and the public.

It is a comparatively easy matter to reach people in cities and towns with these forecasts and warnings in time for the information to prove advantageous, but the problem of reaching the greater part of our population who live miles from a postoffice and comparatively isolated from the rest of the world is one that is receiving much attention at the hands of the bureau. One of the best methods at present of reaching people who do not have mail facilities or who would not ordinarily receive the information in any other manner is by means of whistle signals. These signals can be heard a long distance; arrangements being made with manufacturing concerns that have steam whistles to blow the signals at specified times, and according to a code adopted by the weather bureau and which can be obtained on application to any weather official and frequently of the party blowing the whistle; the code of signal is simple and can easily be committed to memory. Another advantage of the whistle signal (if blown at a regular hour) is the fact that it also furnishes a large number of people with a standard of time.

The uses to which the forecasts and warnings can be made to serve are many and varied; every one of course utilizes the information as best suits his individual needs. One might use the old proverb and say that "to be forewarned is to be forearmed." If the forecast was for rain on the morrow it would not be advisable to cut hay to-day; or, on the other hand, seeding operations might be pushed and advantage taken of the fact that rain would probably soon fall on the freshly loosened soil and thereby greatly promote germination of the seed. In winter the cold wave warnings are of immense value if the knowledge of the expected condition is rightly applied, as regards the protection of perishable products in storage, in transit, or even the delay of shipment until a more favorable time, in the care of live stock and in many other ways. If frost has been predicted the usual precautions can of course be taken as regards the protection of fruits and vegetables and sensitive plant life of all kinds, bearing in mind that a covering of straw, a cloud of smoke caused by smudge fires, flooding the soil, or in fact any artificial covering that will tend to prevent free radiation of heat, will go a long ways toward preventing serious injury, by frost.

A very important feature of the weather bureau, as at present organized, is the state weather service. In this branch there are over three thousand observers in the United States, who voluntarily, and without pay, other than the various reports sent them, take observations in their localities, of wind, weather, temperature and precipitation (rain and snow, etc.). Each state service is practically in charge of an official under pay of the United States weather bureau. This official has for his headquarters some weather bureau office in the state over which he has the charge; Columbus, for instance, being headquarters for the Ohio state service. The majority of states annually make provisions for the purchase of instruments, etc, and the printing of reports and bulletins issued by such state service, the idea being to maintain an independent weather service for special purposes locally, and which also co-operates with and receives special privileges from the government in connection with such work.

Ohio is one of the pioneers in this regard and her state weather service is equal to and also superior to many of like nature in other states. The Ohio climate and crop service was established by act of the General Assembly April 17th, 1882. From fifteen hundred to two thousand dollars is appropriated annually for its maintenance, other than the printing of reports and bulletins, which is provided for by the state printing fund. The act creating this service, among other things, provides that it shall be under jurisdiction of the State Board of Agriculture, and Hon. W. W. Miller, by virtue of his office of secretary of that board, is director of the Ohio climate and crop service, the writer being assistant director, and representing the

United States Department of Agriculture; this connection between state and government carrying with it many privileges of direct money value to the state as regards saving postage, clerical assistance and in many other ways proving advantageous.

The instruments usually furnished voluntary observers consist of standard makes of maximum and minimum thermometers and rain gauges, being loaned to individuals co-operating by either state service or by the government, depending upon circumstances. The voluntary observer is not put to any cost in the matter, all necessary supplies being furnished him from headquarters and the government attends to the postage feature by means of the "franking" privilege. The value of the data furnished by the state weather services must not be underestimated. The success of the forecasts and warnings depends in a great measure on an intimate acquaintance by the forecaster with the peculiar climatic features of any section, and this can only be determined by the record of years.

Again, is it not important to know about how many rainy days to expect for any section of the country on an average during each month, season and year; the average amount or number of days 'sunshine; the average temperature and precipitation and the extremes of each during the various seasons; the probability of thunderstorms each month and year; the average direction of the wind and its force; the average depth of snowfall and the first and last dates of its occurrence; the average dates of the first frost (whether light or killing) in autumn and the last frost in spring, together with all the other characteristics that combine to make climate in any place? The data thus collected is utilized in a countless number of ways; in the courts of justice as a matter of record when bearing witness in any case where the condition of weather at a particular period often carries with it either success or failure as regards winning the case at bar; in the discussion of the relation of climate to health; the effects of climate upon agriculture and manufactured products of all kinds; the relation of soil to moisture; and the effects of climate upon the supply of water as regards either inland navigation or for the needs of man in all his avocations and daily life and the maintenance of all animal organism.

Besides collecting the data mentioned these state services attend to the dissemination of all forecasts and warnings for that particular state, and also the issuance and publication of weather-crop bulletins. These weather-crop bulletins describe the effects of the weather on the staple crops of a specified section from week to week during the growing season, thereby giving the agriculturalist and others interested a very definite idea as to the outlook as regards crops in any state; the abundance of yield and the law of supply and demand being the index points which mark the probable money value of any product.

All the reports and forecasts issued by the weather bureau are designed for the benefit of the public and are furnished free to interested parties upon application to the proper official at any weather bureau office, the distribution of such information depending upon circumstances.

A word concerning foreign weather services may be of interest. The following countries publish weather maps and issue forecasts: Great Britain, France, Germany, Belgium, Austria-Hungary, Switzerland, Italy, Russia, Spain, British India, Japan, Australia and New Zealand. Canada and Cape Colony issue forecasts, but do not publish maps. The following countries maintain a system of observations, and issue certain reports, but do not prepare daily maps or issue forecasts: Norway, Sweden, Denmark, Netherlands, Portugal, Roumania, Algeria, Mexico, Brazil, Argentine Republic, Chili, China and certain smaller countries.

In conclusion allow me to say that this government of ours has the best equipped and organized, the most practical and therefore the most useful weather service of any country in the world, and I trust this assertion of mine will not be regarded in the nature of egotism or pardonable family pride in everything American, for there

are good and sufficient reasons to prove the truth of the statement; one being that we occupy unobstructed the greater portion of this continent from ocean to ocean, and the area being very large and the weather greatly diversified affords unusual facilities for the study of climate and the tracing of storms; another reason is our form and principle of government and its hearty support of scientific institutions. In European countries there are many very fine weather services (in fact nearly every civilized government of any pretensions has its weather service), but many of them are handicapped and hampered as regards co-operation and practical use by reasons of state, which include political and racial conditions and limit as to unobstructed territory: difficulties which, in the abstract, we in the United States do not have to contend with. I admit that the science of weather is not yet fully understood, but with unrestricted facilities at the hands of congress and legislatures the means will be provided for deeper investigation on special lines that cannot fail to further improve the forecasts and warnings as regards accuracy, and raise the standard of value of all work done.

THE RELATION EXISTING BETWEEN THE AGRICULTURAL, AND OTHER INDUSTRIAL CLASSES.

BY MCPHERSON BROWN.

[Read at the Miami County Farmers' Institute, held at Piqua, O., Jan. 31 and Feb. 1, 1896.]

It gives me great pleasure to come before you at this farmers' institute to discuss the relations existing between the agricultural and other industrial classes.

Coming as I do from the workshop, I feel that a greater community of interest and a better understanding of the relations between the laborer in the field and the laborer in the shop should be brought about. In fact, there has been in the past too much of the feeling that the prosperity of farmers was dependent upon their maintaining the ascendancy in numbers, in valuation of property, and the valuation of the products of the farm over the products of the manufactories of this country. This, I believe, to be an error.

The vast army of laborers in shops and in the avenues of industry, producing and distributing the different articles of commerce from the hands of the manufacturer, must only result in an increased market for the consumption of the articles produced upon farms. It is a fact that the tendency of concentration of population in the cities has been a marked feature of the settlement and development of this country during the past half century. This tendency has invited inquiry into the relations of the congested population of cities and the reported existence of the desertion of farms. The suffering among wage earners of the cities during the past three winters, has directed the efforts of intelligent philanthropy toward relieving the evil. Investigation has demonstrated that the suffering is but an accentuated form of the oversupply of municipal labor markets. The investigation of statistics in this direction, shows that from 1790 to 1880, the population of this country has increased twelve times; while that of the cities of eight or more thousand inhabitants has increased eighty-six times. In 1790, one-thirtieth of the population of the United States lived in cities, and in 1880 nearly one-fourth, and this does not include the population of the smaller towns and villages throughout the country. While this change has been going on, the productions from the country have only increased about one-half as rapidly as the ratio of city and country population has increased.

The valuation of agricultural lands in comparison with city real estate has a more startling development even than in the unequal increase of population. During the first half of the century, the unoccupied lands awaiting the settlement and development of agricultural labor prevented a very great increase in the value of lands of this character; yet, for the past twenty-five years, these lands have been so rapidly taken up that there is now but little room for expansion in this direction, and the rule of gradual increase would certainly point to a more rapid increase in value of agricultural lands in later years than during the former period. On the contrary, we find that for the last score of years lands all over the country have been depreciated in value year by year, until they are now worth perhaps not to exceed two-thirds of the valuation of twenty years ago. While this shrinkage has been going on, we find a different state of affairs in the real estate in and about our cities. The rule has been that in every city of the land a steady and increasing enhancement of valuations has been placed upon city real estate. In some instances, this has reached almost incalculable proportions, and in most greater cities the valuation of land has become so great that it is beyond the hope of any, except the holders of large amounts of capital, to be able to possess even the smallest parcel of land to make a home within the limits of our municipal corporations. In a late sale of real estate in a desirable location in New York City, a body of land of less than one hundred by two hundred feet sold for the enormous sum of more than seven millions of dollars. This enormous enhancement of valuations in city real estate, together with the great tendency to increased population in cities, has resulted in the vast body of municipal population becoming the tenants of city land holders, and, in one sense, the slaves to an oligarchy of such capitalists.

While this condition as to population exists, and the valuation of the real estate held in country and in the town, the productions of the two classes of population have not thus changed. The products of agriculture are to-day, perhaps, of very little different value than that which was placed upon them fifty years ago. The wool from your flocks, the grain from your fields, the vegetables from your gardens, find a market to-day at prices scarcely above, and in some cases below, the actual cost of production. The productions of the industrial labor of our cities have been reduced by the agencies of labor-saving machinery, by the aggregation of capital in employing such labor, and the facilities for placing such goods upon the market through the improved means of transportation. All these agencies have reduced the prices of industrial products other than agricultural, even to a greater degree than the reduction in prices of agricultural lands.

The relative density of population, the cost of land as investments or for homes, and the value or price realized for the products of industrial labor form three great avenues through which the relative welfare and prosperity of the industrial classes shall be brought about.

The great increase of population in cities and towns over rural population, it seems to me, can only result in good to the country by offering a home market for your products. The history of this country proves that the domestic consumption of our crops has gradually increased until more than ninety per cent. of all our productions are consumed at home, yet the ten per cent. surplus to be marketed abroad fixes the price for the ninety per cent. consumed at home. This surplus goes mainly to Liverpool, which is the buying center for the world's agricultural surplus. We there come in competition with the cheap products of China, India, Australia, and the South American States. In the near future this competition will be enhanced by the products of the Transvaal Republic of South Africa, and from the fertile tropical fields of the Congo Basin, and throughout the heart of the "Dark Continent." How futile then is the idea of depending on our exports to bring prosperity to our farms, or that Liverpool will fix a higher price than will buy the products of cheap labor and fertile soil of the countries I have enum-

erated. When the consuming population of this country shall have so outgrown the producing classes in these lines, that every bushel of your grain and every hoof of your live stock shall be consumed and not exported; when New York, Cincinnati, Chicago, St. Louis, San Francisco, and all large cities shall each become a center where prices of commodities shall be fixed; when producer and consumer shall as nearly as may be, be brought together and the law of supply and demand govern the sale of your products; then will the speculator in the Chicago wheat pit, and the manipulator of the New York Produce Exchange have measurably lost their job; then no longer will the railroad king and steamship manager be able to absorb all of the profits in transporting large and bulky crops from the place of production to the place of consumption. It is only where these two places are kept most widely separated that the power of monopoly and the tyranny of capital are most readily exercised and most fully felt. The bushel of potatoes consumed by the iron molder of Piqua will enable him to turn out as great an amount of his handiwork as in any other country in the world. The bushel of wheat consumed here by the finest tin plate worker will enable him to turn out just as many and as good tin plates as though the same wheat were consumed in Wales. The individual working behind our loom and producing the woollens and other fabrics to be consumed in this country, are able to produce just as good and salable fabrics in Ohio as in Bradford, England, and every particle of your products they consume while thus engaged are saved the cost of transportation to England, as well as the transportation of their manufactured articles from there here. The manufactured steel is not only the representation of the iron which enters into its composition, but is also the representation of the coal in its preparation, the labor expended in mining both the coal and ore, and every after process through which it passes; also the cost of living of every individual who engages in any part of its production.

The laboring classes, other than agricultural, form the great body of the population, who are to consume your surplus productions, and their ability as consumers must depend very largely upon their social condition, the wages they receive, the homes they are able to maintain, and their social standing in communities must very largely determine their ability to buy and their capacity to consume such products. From this it will be seen that there are no two classes in this country making up so great a portion of its inhabitants who have a closer relation and a greater interest each in the welfare of the other, than these two great classes of laborers throughout the country.

The socialistic conditions so rapidly developing in the past quarter of a century in America have each year increased this mutual interest and each year develops more strongly the fact that the stability and perpetuity of American institutions must depend upon the sober second thought and firm execution of deliberate judgment of the great middle classes.

It seems to me that it must be a matter apparent to every American of cool judgment and mature deliberation that the dangers to a republican form of government lie in the extremes of wealth and poverty that are so rapidly developing. The unjust encroachments of wealth and capital, and the power that may be wielded for the advantages of untold accumulations, and the perpetuation of great wealth in the hands of a few people, together with the degrading influences of immorality, licentiousness, and corruption that so often follow the lavish expenditure of money, tend to degrade our standard of business as well as the standard of individual character; while, on the other hand, the history of the world has always demonstrated that vice and ignorance are the accompaniments of extreme poverty.

The rapidly increasing numbers of our pauper population, together with the evidence of unrest that everywhere looms up, indicates that the danger line of anarchism and communism, and like evils, are often being very nearly approximated by our unemployed and starving poor. In no country in the world has there ever

been exhibited such a rapid accumulation of values in the hands of single individuals as has been demonstrated in the United States within the past quarter of a century. Many of us remember the time when the recording of the wealth of any individual in the millionaire column was of rare occurrence, and even became a matter of curiosity in history. To-day there is scarcely a city of ordinary proportion in any of the older states of the union but can count among its citizens from one to a score of persons who count their wealth by the million, and it is only the multi-millionaires that are calculated among the wealthy people of the United States; and among these it becomes not a question as to how many of the good things of life can be purchased and enjoyed by the individual, but the contest to see which shall be able to spend the greatest amount of money in the least possible time.

Within the past ninety days, three heiresses of this country, who have inherited the accumulations of little more than a single generation, have been wedded to the aristocracy of three leading monarchical governments of Europe, and the lavish expenditure at the marriage of either consumed more capital than the value of all of the property in each of half the townships in Miami county. It is needless to say that these vast accumulations were not the result of legitimate addition to the wealth of the country, or the accumulation of legitimate profits; but simply the absorption of the results of other men's labor and other men's brains.

The false idea has prevailed in American business circles that it is every man's right and privilege to sell what he has to sell for all that he can get for it, and to buy that which is necessary to be bought for just as little as it is possible to purchase it for, regardless of circumstances surrounding buyer and seller, or the pressure that may be brought to bear to enhance the price of one and reduce the price of the other. The opportunities for vast accumulations that are afforded in every young and rapidly developing community, have so intoxicated our people with the idea of accumulating, that we have become a people who are the exemplification of the man who sent his son out into the world with the instruction that the great object of life was to get money; that he should get it honestly if he could, but to get it anyhow.

It is an old axiom that we can not produce something out of nothing. The wealth of the country is not the result of chance or of speculation, but the development of values by the use of nature's material, enhanced and changed by the hand of labor and the exercise of brain work of man. He who absorbs or takes to himself the value of a dollar without in some legitimate manner adding a dollar to the world's wealth, has simply appropriated the results of the use of the capital, the muscle or brain of some other individual, which can not be added to the accumulation of one without having been taken from that of the other; and he who by speculation has, upon this principle, absorbed a million of dollars of the world's wealth, has only accomplished it at the expense of making one thousand of his fellowmen one thousand dollars poorer.

Every man is entitled to a fair profit on every dollar of capital invested, every day's labor, and every bit of brain work expended in the legitimate avenues of agriculture, manufacture, trade or commerce of the country. More than this is public robbery no matter by what other name we call it.

Investigation has proven that the wealth of most of the multi-millionaires of this country has been accumulated by railroad wrecking, stock bonds or produce gambling, or by monopolistic holding of real estate; thus withholding just remuneration from the producing classes or extorting enormous profits from consumers. The result of these economic conditions is a constantly increasing army of paupers and dependents in our cities and a constantly increasing tenant farming in the country.

Each year a smaller percentage of our people own their homes in cities or till their own farms in the country. Each year the homes of more people become but

a temporary habitation subject to the whims or avarice of the landlord or the immediate necessities of the tenant. History does not record a single instance where such economic conditions existed and liberty and free government continued any great length of time.

In a monarchical form of government the edict of the ruler and the iron hand of power may reconcile these antagonistic forces and repress the unrest and dissatisfaction of the masses, but in a government like ours, where the source of power is in the individual citizen, and where all power successfully exercised must be by the consent of the governed, that power must be directed by the principles of justice, liberty and right and that consent must be prompted by freedom, loyalty and good will.

The permanency of a republican form of government is yet undemonstrated in the history of the world. Our country has not yet passed the experimental period or formative stage; the breakers and rocks which have wrecked those who have gone before may not be passed unheeded by us. The unequal distribution of wealth and the methods of its accumulation, have more than any other been the rocks upon which all former republics have stranded.

I believe this question is the most serious problem that confronts the present or the future of this country. I am not a pessimist or alarmist, come to prophesy ruin or foretell disaster. I believe the difficulty will be solved in accordance with the principles of justice and right. I do not believe its solution will come through the medium of red handed anarchism or the unmerited distribution of communism; neither do I believe that it will be accomplished by the autocratic edicts of wealth and avarice, but from the calmer and more unbiased judgment of the teeming millions who come from our fields and workshops, whose ideas are born of industry and frugality, and whose conclusions are the outgrowth of patriotism and loyalty.

By this sign shall we conquer, and by these hands shall our free institutions be perpetuated, and our country remain one and inseparable.

THE SOILS OF WOOD, LUCAS AND HENRY COUNTIES, OHIO.

By AZOR THURSTON.

[Read at Grand Rapids, O., Institute, Jan. 23, 1896.]

To open this question it may be well to first trace, to some extent, the geological formation of the territory. During the glacial epoch the surface of Wood, Henry and Lucas counties was probably one thousand feet above the present elevation, and the climate would rival that of Labrador. At that period Lake Erie was not a lake, but a valley. The period of high elevation was followed by a water period, during which the whole of North America was depressed about five hundred feet below the present level, and the climate had become almost tropical. The glaciers now began to melt and move southward. The great valleys of the now great lakes were filled, and to a point very much above their present level; which is clearly demonstrated by the fact that in addition to the present beach of Lake Erie we find four other well-defined beach ridges, the outer one of which extends well into Allen county. During the subsidence of the waters the Erie clays were deposited, and, they in turn covered by boulders, sand and gravel from the melting icebergs. Thus we find that the counties of Wood, Henry and Lucas were at one time a part of the bottom of Lake Erie.

In consequence of submergence the soil of this district is a deposit of drift, varying in depth from five to two hundred feet. Geologically speaking, all of this drift is soil, but, from an agricultural standpoint only ten or twelve inches of the surface is so considered, and the portion below is termed subsoil. The subsoil usually contains much less organic matter than the soil. It is usually presumed that the deeper the soil the better the land, but this is true only in a relative sense. All plant food is taken from within a few inches of the surface, and the existence of such food at a greater depth than can be turned by the plow is of comparatively little value. It is of much more importance that the subsoil be sufficiently porous to allow the penetration of heat and moisture. Soils are affected by mechanical manipulation and chemical combination. By mechanical manipulation we refer not only to the use of the plow and other agricultural implements, but the earth worm, the craw fish and other apparently useless life forms are active agents in the incorporation of the organic and inorganic compounds of the soil; at the same time making it more porous and pulverulent.

Of the seventy-four known chemical elements there are but eighteen found in the soil in sufficient quantity to be considered important in the growth of plants. They are:

Oxygen, chlorine, aluminum, iron, silicon, phosphorus, calcium, magnese, carbon, boron, magnesium, barium, sulphur, nitrogen, potassium, hydrogen, flourine, sodium.

Of these elements only three, namely, phosphorus, potassium and nitrogen, are of sufficient importance to farmers to be considered at any length; nature supplying the others in, practically speaking, inexhaustable quantity.

PHOSPHORUS.

Phosphorus was discovered by Brand in 1669. It does not exist in a free state in nature, but is found in combination with oxygen and calcium widely distributed in phosphate rocks, in bones of animals and in plants. The oldest phosphates are those of the igneous rocks, and this was the original source of the phosphorus of plant food. From the plant the phosphorus, in combination with calcium, passes into the osseous structure of animals; the ashes of bones showing almost pure calcium phosphate. It is the opinion of the best writers that the immense deposits of phosphates in Florida are from animals driven south during the glacial period. Wiley states that the cereal crops remove about twenty pounds, and the grass crops about twelve pounds of phosphoric acid from each acre of ground annually.

POTASSIUM.

Potassium is, with one exception, the lightest metal known. It is not found in a free state in nature, but always in combination. It was discovered in 1807 by Sir Humphrey Davy. In soils it is usually found in combination with an organic acid. Potassium carbonate is obtained from the ashes of plants, being percolated with water, the result being a solution of potassium carbonate, or, as the soapmaker would term it, lye. The brownish color of lye is due to the organic matter dissolved during the process. By clearing forests and burning the timber on the ground a large amount of this valuable chemical is added to the soil. Beet roots contain so large a quantity of potassium salts that they have been used as a commercial source of this metal. Sheep's wool is another considerable source. The water in which the wool has been washed is evaporated to dryness and the potassium is recovered by chemical methods. Soil should be rich in potassium to abundantly produce the root crops, such as beets, potatoes, etc.

NITROGEN.

Nitrogen was discovered by Rutherford in 1772. Four-fifths of the bulk of the air is composed of this element. Although it exists in great abundance in the free state, and is necessary to plant life, yet it cannot be utilized until converted into nitrates. It is found in soils as ammonia, either in the gaseous state or combined with minerals, or organic acids. As ammonia, it may be considered as in a transition state, as it does not become a plant food until completely nitrified and converted into nitric acid, which is accomplished by the action of bacteria. These bacteria, or vegetable parasites, are found in the soil to the depth of three feet, but are most numerous in the cultivated portion near the surface. Seaweed is rich in nitrogen and is a good fertilizer, much used in littoral farming. Fish, also are very rich in nitrogen. Nitrogen combined with oxygen and a suitable base is used quite extensively as a fertilizer. This combination is found in guano, which is the nitrogenous excrement of various sea fowl. Sodium nitrate, or Chili saltpetre, is imported into the United States in large quantities; it contains in a pure state sixteen and one-half per cent. of nitrogen. Enormous deposits of these sodium nitrates are found along the coast of Peru, and there has been much speculation as to their origin; some authorities maintain that at one time the Peruvian coast was covered by the sea, and the nitrates are the result of the decomposition of sea plants and animals; as, however, neither shells, fossils nor phosphate of lime are found, it is highly probable that they are not of animal origin. Better authority seems to be that the deposits were formed from the decomposition of the feldspathic rocks.

ARE ARTIFICIAL FERTILIZERS REQUIRED IN THIS DISTRICT?

According to Dr. Wormley's analyses of the soils of this district we have abundance of phosphoric acid and of potassium. It has been ascertained that medium soils weigh about three million pounds per acre to the depth of one foot. Basing our calculation upon this, the soil of this territory contains an average of eight thousand one hundred and eighty-five pounds of phosphoric acid to the acre, and more than that amount of potash. To grow one bushel of wheat it requires seventy-one one-hundredth of a pound of phosphoric acid, and less than that amount of potash; therefore our soils should produce one hundred and fifteen thousand bushels of wheat per acre without any further addition of these two chemicals. In other words, they should produce twenty bushels per acre for the next five hundred and seventy-five years, or fifty bushels per acre for the next two hundred and thirty years. Now as to nitrogen, while it is so abundant everywhere, it is necessary to replenish the soil quite frequently on account of the large amount annually extracted by certain crops. This replenishment is most readily and most cheaply accomplished by raising clover. The nitrogen of the air is stored up in the clover by the action of bacteria on the roots, converting the nitrogen into nitrates, which is the essential form for plant food.

Statistics show that artificial fertilizers are used upon one-third of the acreage of wheat sown in Ohio annually. This may be necessary in some parts of the state, but, in my judgment, the farmers of this district would be ahead financially if they had never used commercial fertilizers, and, instead, had properly tilled the soil. With a soil naturally supplied with phosphoric acid and potassium salts, all that is necessary for an abundant harvest is to have your farm well tilled; return all wood ashes and barn-yard manure to your land; rotate your crops; plow deeply; pulverize the soil (this is very essential), and you will have no necessity for artificial fertilizers for the next one thousand years.

OUR MARKETS.

By J. S. BENSCHOTER.

[Read at the Farmers' Institute, held at Bowling Green, Wood County, Dec. 30 and 31, 1895.]

I am aware that the question of "our markets," and how best to dispose of the products of the farm, is a very old one, and has puzzled the brain of more than one farmer, for lol these many years, and it seems like presumption on my part to undertake a task in the solution of which so many have failed. But the importance of the subject is my only excuse.

How to produce a crop is a simple matter compared with the solution of the problem of how to dispose of it to the best advantage.

The law of supply and demand, we are often told, regulates or determines the price. And this seems like a very simple solution of the matter. But is it true? Let us examine some of the methods by which the fluctuations in the market are produced and see if we can discover any other agency than this law of supply and demand, whereby the markets of the world are so constantly changing.

The law of cause and effect holds good in this as in all other things. The effect is very plain to the farmer, when he seeks to convert the hard earned products of his farm into cash, and he anxiously watches the daily report of the market, but with no certain assurance that the report of to-day will indicate the price of to-morrow. The real demand is the same to-day as it was yesterday or last week, or last month, and just as well known at the great market centers. There is just as much money to purchase, just as many hungry people to be fed. Then why these sudden changes? How easy to ask the question, but how hard to track the fox that steals the goose. The effect is very plain. But where is the cause?

Somebody has hold of the strings and is pulling, first this way and then that; we don't understand why, but we take a cent or two less for our wheat or corn. Millions of bushels change hands in a day. Somebody is made richer; somebody is made poorer. Who is it? You know who is made poorer. But never mind, it's only a few paltry dollars you lose this time. Congratulate yourself that you have by your labor added to the world's wealth, while the other poor fellow perhaps never had the pleasure of earning an honest dollar in his life. Have charity for him, perhaps he don't know, *possibly* don't care, that you, your wife and children will have less clothes to keep you warm. The world calls him shrewd, and I am afraid you do too. If you do, call him by some other name. While he thinks with satisfaction of his increasing bank account, you wonder how you can make both ends meet.

But my dear sirs, it won't do to grumble. We are a part of the lawmaking power and he only does that which the law we helped to make, does not too strictly forbid. Let us speak of him respectfully, he may be the president of some grain trust. He is only doing in his line, what some other gentleman is equally as anxious to do to help us to dispose of our surplus beef, pork or mutton—who is very busy seeking some method by which he may stimulate the market by a quiet *combine in our interest*, of course. They both belong to that class which seems to think there is wealth enough in the world without its producing any, but they are nevertheless very anxious to see that it is properly distributed. They understand that labor alone, of hand or brain, can produce wealth. But they don't like to join with us for fear that the competition will be too great. They know that to labor is healthful and that if they too engage in it they may deprive us of our employment. Can't you see they are thinking of our interests and how they can contribute to our happiness by keeping us employed raising wheat, beef and pork, while they very generously husband our resources?

Another and very important element that enters into this question of market, is the question of transportation. In this, as in the other, we see the power of organized capital and the great railroad corporations are sure to raise the rates of transportation if there is an unusually good demand or an unusually large crop. But how could they pay such large dividends and such princely salaries to their officials, if they did not cut up on rates and down on the wages of their employes? High rates of transportation affect us not only in what we have to sell, but in nearly every article we have to buy. These continued extortions on the part of the railroads emphasize the necessity for a deep water-way from the lakes to the Atlantic, to be owned and controlled by the government, and not by any private corporation. We cannot afford to longer submit to extortionate freight rates. Every business interest of the people demands a change.

I believe the farmers as a class are willing to concede to every one (be he a public carrier or otherwise) a fair compensation for his labor; and I also think we should have the manhood to demand the same for ourselves. If there are any good reasons why we should not, I would be glad to know them.

The public ownership of railroads and canals is a question fraught with a good deal of interest to the great mass of the people, and one that should have the most careful and judicious consideration of the law-making powers. If I mistake not the canal system in this state, has been the property of, and under the control of the state from its very inception to the present time, and notwithstanding the fact that they have had every obstacle that the most unfriendly legislation could throw in their way, who ever heard the complaint of extortionate freight rates, or of any combines to take advantage of the people? In strong contrast is the present robbery of the people by steam and electric railroads and other semi-public corporations, which have reached such a stage that even the most hardened politicians begin to realize that the people won't stand it much longer. Hence much more interest is manifested in the problem as to how we can make our great systems of transportation better serve the public good and the feeling is growing that the governmental ownership of all transportation lines is the only remedy for this growing evil.

Governmental policy has much to do with the value of the markets of its people. The very best market, as a rule, is the home market. The nearer you can bring the producer and consumer together the better it is for both.

Therefore, the true policy of government is to enact such laws as will have a tendency to stimulate, protect and develop all the resources of its people, and the production and manufacture by them of every commodity necessary for their welfare and happiness; thus giving employment to all who may now lack for work or bread. The increasing tendency of the people to congregate in town and city, will aid materially in increasing the number that consume our products. Thus creating a greater demand, and therefore a better market.

Much will depend upon the enactment (*and enforcement*) of wise and wholesome laws—such laws as will tend to suppress vice and immorality, and the inculcation of habits of thrift and industry—and the manufacture at home of every article we use. This is of the utmost importance. The broadest statesmanship is needed—men of both brain and courage—men who know the right, and “knowing dare maintain”; for we must not lose sight of the genius of our free institutions. We are in danger if we allow money to have more power than manhood. The rights of the masses must not be perverted in the interest of a few.

But while the law can do much to increase the value of our markets, each individual farmer has much to do with its value; and if out of debt (as every one should try to be), he has the choice as to when and how he will dispose of what he may produce on his own farm.

As a rule I think the best time to sell our grain is when ready for the market; any animal we may be feeding, when properly fattened; and any other animal or

article we may have to sell, when we are offered a good price. Much, however, may depend upon the probabilities of the future, the abundance of the kind of grain or stock we may have for sale, the amount produced, not in our own country or state alone, but throughout the world; also the amount unconsumed. The facilities for such information are quick and reliable, and everyone may, by reasonable intelligence on his part, keep himself informed.

Much also depends on the condition of the laboring classes. When all are employed, all are able to buy bread and meat, consequently the demand is greater, the market better.

There are other, yes many, things besides those I have already mentioned, that have their influence on the market.

We should make it our business to understand this matter better. We read in our agricultural papers, we hear in our institutes, the advice, to feed our grain on the farm; but how few even attempt to follow this advice. We are told that we can't compete with the great west in profitable stock raising. This *may be true*, but after many years of observation, and some experience, I am compelled to believe that the farmer who keeps something ready for the market the year round, is the one from whom you hear the least complaint of hard times; the one who has the least trouble to pay his debts, and the one whose farm grows richer without the aid of commercial fertilizers. I am aware that it requires good care and judgment to manage this branch of farming successfully. There are certain times in the year when one kind of stock is in better demand than any other; but very seldom that a good, thrifty, well fed animal is not marketable, and at a fair price. I shall not attempt to tell you how to do this—every farmer who attends these institutes understands the value of good breeds; and he also understands that the shortest possible time between birth and full maturity always means the most profit to the producer.

In conclusion, I will only say this—that while I may not have succeeded in saying anything new on the subject, I hope that by the repetition of oft told truths, I may have in some measure emphasized their importance, and said nothing that may detract from the dignity or honor of agriculture.

"A DISH OF HASH."

BY J. W. SHERER, PAYNE, O.

[Read at the Paulding County Farmers' Institute, held at Oakwood, Jan. 10 and 11, 1896.]

When the economical housekeeper finds the fragments from the table too small for another meal, she gathers them up, and by a process known only to herself and Omniscience, there is straightway evolved therefrom a dish that is neither vegetable, nor fish, nor flesh, nor fowl; and although it may not be a "thing of beauty," or a "joy forever," it makes a pretty substantial filler, and sticks to one closer than backwoods lovers on circus day, or poor relations to a rich kinsman. *That dish is hash!* And when your secretary informed me that I was expected to furnish a part of this institute feast, an examination of my intellectual cupboard speedily convinced me that the only things available there, were a few thought fragments upon farm problems which in a greater or less degree affect the farmer's profit and loss.

In this year of Grace, with the five great staples of north-western Ohio farmers, wheat, corn, oats, horses and hogs selling at or below the cost line, our farmers

are not in a hilarious state of mind, nor are they intentionally indulging in many luxuries; and with interest, taxes and other fixed expenses growing harder and harder to meet, they will not, in the near future, invest often in job lots of seal skin sacks, nor feed diamonds to their poultry instead of oyster shells.

I know that it is the favorite theme of farmers who publish agricultural papers, that our salvation lies in producing twice the number of bushels from a given number of acres. This is a beautiful theory, but the facts have rather the better of the argument, when we remember that the one billion three hundred and sixty-five million bushels of corn produced last year, were worth more dollars than the two billion three hundred million bushels are worth this year! This sort of theorizing makes the real farmer greatly resemble a bicycle, all round tired, always on the go, and liable to go to smash at an uncomfortable time and place.

Cost of production must be reduced, or the sheriff will not be able to adopt the eight hour system. This is official and strictly confidential; and until lower cost of production is effected by reducing expenses, or better prices are realized, many of us will continue to cry out "men and brethren, what shall I do to be saved!" Which brings me to the material my "Dish of Hash" is made of.

One method of reducing expenses is by feeding less valuable food, to stock and selling the more costly. At the present time hay is very high, and corn fodder is low. Many farmers waste tons of it and feed hay, even if they have to buy it.

I have a team of heavy farm horses, which I bought March 16, 1895. It were then in rather poor condition. The past season I sowed seven and one-half acres of oats, planted and cultivated twenty acres of corn, cut twenty acres of small grain, plowed twenty acres of land for wheat, dragged twice and drilled it, and also seeded seven acres of corn stubble, going over that ground three times; drew the material to build a house and much other work. For fifty-two working days in succession they never missed being in harness. To-day (January 11, 1896) that team is in first class working condition, and will weigh at least three hundred pounds more than it did when I bought it; and it has eaten not to exceed two thousand eight hundred pounds of hay—not guessed at either, but baled hay which is noted for overweight.

I fed corn fodder, sheaf rye, and sheaf oats. I commenced feeding rye about the time the grains were fairly developed, and continued on that and the oats until corn was nearly ripe; then husked and cut it, and let it wilt a day or two. With fodder I should prefer to feed oats, but corn is all right. When feeding fodder, feed plenty of it. My corn is very heavy—was drilled corn—and I feed about a one-hundred-hill shock a day to the team. This is worth at the farm about ten cents a shock, and is the cheapest feed I know of and as good. The coming season I do not expect to feed a pound of hay.

There is another luxury most farmers think they *must* have in large quantities—farm fences; notwithstanding they are more expensive to support than a mortgage, and generally more useless than a farm watch dog. I know I attack an old and venerable fraud, when in the slang of the day I "sit down on" the old farm fence.

The ideal farm used to be inclosed with a ten-rail fence, staked and ridered, and divided into five and ten acre fields. Those ideal farms belonged to the same era as the hand loom, spinning wheel and twenty-five cents a gallon whiskey. The loom, the wheel and the whiskey are gone, and the farm fence is about all that remains of that semi barbarous age. Farm fences then were neither frauds, expensive nor useless. Everybody then supposed that it was written in the Declaration of Independence, and the Constitution of the United States, that farm animals had an inalienable right to life, liberty, and the pursuit of happiness in his neighbor's corn field, provided they could jump over, break down or crawl through the fence thereof, and that there was no reason for complaint upon the part of the neighbor. They didn't

complain; they built the fences. Timber was worth nothing and making the rails kept the farmer fully employed for fifteen or twenty years and kept him out of more serious mischief; and so firmly the idea became ingrained that they were desirable and necessary, that behold they remain unto this day.

My farm contains only one hundred and twenty-five acres, and if adjoining land owners built half the line fences, to inclose it and divide it into ten acre fields would require nine hundred and eighty rods of fence, costing at least seventy-five cents per rod for fairly good board fence made from native lumber. This fence would last about twelve years, and would cost seven hundred and thirty-five dollars; which at 8 per cent. interest for that time would amount to one thousand eight hundred and fifty-five dollars. Then the fences would occupy at least three acres of land worth four dollars per acre a year. This would foot up one hundred and forty-four dollars in twelve years, and interest on this sum added would amount to three hundred and twenty-five dollars. It would also cost at least twelve dollars per year to cut weeds in fence rows twice, which places three hundred and twenty-five dollars more to the account, or two thousand five hundred and five dollars for the twelve years, or nearly two hundred and nine dollars per year. And what would I gain by it? A little pasturage of stubble fields which the modern binder has gleaned so perfectly that a razor back hog would have to hustle for his living until he starved to death; some pasturage of meadows which would do the meadows more hurt than the value of the pasture would amount to. I would also gain several days work for myself, without pay, laying up rails and straightening posts blown down by the wind; and also several more days' labor by plowing and cultivating short rows instead of long ones; and when the valuable accommodation of sitting upon the fence to talk politics, and of having a more or less convenient place upon which to sign lightning rod contracts are added, the benefits of farm fences are about told.

Of course a pasture is desirable and some small lots. Have them near the barn and fenced so high, strong and close that no farm animal will attempt to break out; but don't be chump enough to fence the whole farm, or maintain it if already built. Some portable board fence could no doubt be used to advantage, but I am "dead against" the ordinary farm fence nuisance.

Another pretty expensive farm luxury is fancy bred stock. I do not mean by this to favor scrub breeding, but the breeding for show-ring points. Not long since a Benton township farmer told me he believed he had a good stock of hogs for pork purposes as there was in the state. They were prolific, healthy and good feeders, with heavy sides, hams and shoulders at an early age; but somehow their ears were a fraction of a red hair too long or short, or else their jowls were an ounce too light and they would not class as high as some others in the show ring; so he had just bought a fifty dollar male to put the "heads on 'em."

I knew him as a level headed farmer and hog raiser, but it struck me he was paying an exorbitant price for "hog-heads;" especially, if, as is very likely, he happens to get a strain of hogs weak in reproductive power, and ability to withstand disease.

The truth is that all high breeding of animals in the development of fat and flesh is done at the expense of the vital and reproductive organs; and with this forced development inevitably follows a weakening of their ability to withstand disease and to produce and nourish their young.

Another subject for careful study by farmers is farm machinery. This has been brought to such a degree of efficiency and usefulness that its use seems indispensable. And yet in these days when farmers are cussing and discussing hard times it is important that they use pencil and paper upon this problem. Whether its purchase is wise or not depends entirely upon how much use you have for it. I do not think the farmer who raises only ten to fifteen acres of corn yearly, uses the best judgment when he invests thirty to forty dollars in a riding cultivator when he can do

just as good work with one costing four dollars, and has abundant time to cultivate his corn with the cheaper implement. Neither do I take much stock in the business sense of a farmer who invests one hundred and forty dollars in a binder to cut ten or fifteen acres of wheat and oats. Eight to twelve dollars would hire the work done, while the wear and tear, interest and taxes, would amount to three times that sum. The everlasting problem of interest, taxes and total loss of money invested in this sort of property must not be forgotten. The inevitable pay day comes and often property must be sold at a sacrifice to meet it.

Why could not Jones, Brown, Smith and Thompson who are near neighbors and small farmers, purchase binder, mower, grain drill, hay loader, tedder and fanning mill in common, or cooperate in the purchase of choice breeding stock at one-fourth the expense to each?

My argument has been along the line of reducing expenses, and I make no claims to their being ideal conditions; but offer the ideas for consideration as a matter of economy—the same reason that prompts the making of a “dish of hash.”

WHY A FARMER'S BOY SHOULD GET AN EDUCATION.

By JOHN W. MAXWELL.

[Delivered at the Ross County Farmers' Institute held at Kingston, Jan. 15 and 16, 1896.]

In order that we may understand each other more clearly it is necessary to explain who is meant by a *farmer's boy*, and what is meant by *an education*. A farmer's boy is meant to designate not only him whose father is fortunate enough to own a tract of land, but also every other country boy to whom the pure air and out-door exercise of country life have given the healthy, well muscled body so essential to the growth of a good, strong, well developed intellect. I do not wish to insinuate, because I have left them out of my subject, that girls should not get an education as well as their brothers, for I believe they should, because the same hand that rocks the cradle, also, indirectly of course, rules the nations of the world. But I always was almost too bashful to keep up a good conversation with the girls, so I leave them for others not so afflicted, while I shall content myself with talking to their brothers. By an education is meant the best possible, determined by the advantages which the individual may have. In other words, I mean, simply, that the prime object and occupation of boyhood and youth should be education. Even though the boy may be compelled to make his own way, he can well afford to spend his entire earnings in gaining an education until he has passed his twenty-first year, at least. Show me the boy who is willing to go in rags, if that be necessary, to gain an education, and I will show you a boy who is going to succeed in life.

This applies to all boys, whether they be farmers' boys or not; but why should the farmer's boy, especially, secure a good education? Will it add dollars to his hoard, and acres to his possessions, if he desires to follow in his father's footsteps and become a tiller of the soil? This is a question which would take more time for discussion than is allotted to me. But, yet, it does not seem proper for me to pass on with a mere allusion to it, since money making seems to be the prime object of life with the typical American. For this he gulps down his food half masticated, thus robbing his body of its proper nourishment; for this he subjects his constitution to the most intense strain when sleep should be renewing his wasted energies; and for this he is content to remain almost a stranger in his home, thus depriving

himself of that refining influence which cultures the soul and makes a man a man in the true sense of the word. The typical American boy is "a chip off the old block," if I may be allowed the expression. He is always wanting to do something to make money; and does not want to spend any more time and money in gaining an education than the law compels, because he cannot calculate the interest he would receive on the investment. We admit that it is impossible to calculate the interest received on money invested in a higher education, because in that case, a few hundred dollars buys a thing of priceless value. The college graduate who has been an earnest student has the advantage in all the walks of life. Place two young men side by side in a railroad ticket office—one who has obtained a higher education and another who has not. When a vacancy occurs and one of them is to be promoted to a more responsible and better paying position, which will be promoted; the one who has spurned education, and whose only training for life's duties has been experience gained from his work? No, he may have learned to do the duties of his present occupation well enough, but his companion who has specially trained his mental faculties to contend successfully with the trials and exigencies of life, is better prepared to take up the duties of a new occupation; and he is the one who gets promoted.

It is not at all improbable that, at the end of a score of years, we may find the college graduate successfully managing the complex affairs with which a railway superintendent is burdened, while his former companion may be found dealing out tickets in the same old office.

Just as a higher education fits one to occupy the most lucrative positions in the other vocations of life, so it prepares him to meet the perplexities of farm life and turn them to his own advantage instead of permitting them to put him to a disadvantage.

The agriculturist deals with and is supported by the workings of nature. By his superior knowledge of nature's laws the educated farmer is oftentimes able to avert accidents which would be very expensive in their results. Not only this, but it is certainly evident to every one that his better trained mind enables him to outdo his uneducated brother in the contest for wealth, providing they were primarily endowed with equal business capacity. But no two persons are exactly equal in mental capacity, and the educated man can by no means realize just how he would have fared had he done without his schooling, no more can the uneducated man imagine what he might have become had he procured a good education. Hence the difficulty of discussing the question whether an education pays in a financial way.

But there is a higher purpose in life than the mere gaining of wealth; and it is for this purpose that I would urge the farmer's boy, as well as all others, to procure an education. Every person in this world has a duty to perform for his fellow-men, whether he is willing to acknowledge it or not; because he and his fellow-men form an organism which is called society—just as distinct an organism as the one formed by the different members of man's body which is called the human body. And, as, to secure the healthy growth and development of the human body, it is necessary that each member give support and nourishment to the rest, so, to secure the healthy growth and development of society, it is necessary that we give aid to each other. Suppose the stomach should become tired of taking in and helping to prepare nourishment for the rest of the body, and should say: "From this time on I will keep all the nourishment for myself. I'm not going to work myself to death for the other organs of the body." Soon the hands and other organs would die from starvation, and would be unable to bring to the stomach the materials with which it might nourish itself. So, Mr. Stomach would soon find himself, along with the other organs, "gone where the woodbine twineth." So with

us, we must work for the benefit of the whole social organism, or suffer ourselves in consequence.

Hence, if there were no other reasons it would be a farmer boy's duty to get a higher education in order to be able to influence his own social class to greater progress and advancement in civilization, that it may stand on a par with other social classes. But there are other reasons. Society feeds on and is nurtured by scientific truths. No other occupation affords an opportunity equal to that of agriculture for the discovery of scientific facts in so many different departments of science. The uneducated farmer must yearly trample over hundreds of facts yet undiscovered in botany and geology, any one of which would make his name famous, could he but pick it out and give it to the world. This is but a glimpse of one or two of the very many ways in which the educated farmer could prove a blessing to society.

But there are ways besides this and the bringing in of wealth in which an education will prove a benefit to the farmer's boy. Among these may be mentioned the real, true, genuine pleasure which it will afford him. Here, again, I assert that no other occupation offers an opportunity equal to that of agriculture for the enjoyment of knowledge gained in a liberal education. While the city dweller sees, and is surrounded almost entirely by the handiwork of poor, weak, frail creatures of the dust, like himself, the country dweller beholds and is surrounded principally by the handiwork of an all powerful Creator. The farmer sees the hand of the Creator sculpturing the sturdy trees which make up his forests, and which lend beauty to the landscape than enchants his view; he sees it shaping the tiny blades of grass that cover his fields with verdure, molding the glittering dew-drop that glistens in the morning sunlight, guiding the rippling, chattering brook through his sloping mead, feeding the turbulent river on its seaward journey, and nourishing his growing crops during their period of formation. He prepares the ground, but Another creates its products. He may look off into the heavens with an unobstructed view and behold the stars illumining the earth, celestial light undimmed by the smoke of the city. To the uneducated farmer, these are little more wonderful than the fireflies which hover over his fields in summer, but to the educated farmer, gazing at them in the light of the facts which science has given to the world, they show forth the utter insignificance of everything terrestrial. As he gazes upon those twinkling points of light with the knowledge that each one is a burning sphere larger than our own powerful sun, and as he tries to conceive of the infinite expansion of the boundless space needed to contain all these, he is overcome with awe, and realizes the feelings of the Psalmist when he cried unto his Creator, "What is man that Thou art mindful of him." But he knows that the same Being who sent the stars circling through space—planet around sun, sun around sun, system around system, and, for aught we know, universe around universe—he knows that the same Being that did all this marvelous work, also numbers and nourishes the spears of grass that cover his fields. Aye, more than this, he knows that that same Being not only nourishes each blade of grass, but also numbers and nourishes the minute cells that make up each tiny blade. What can give more pleasure than to watch the work of an all powerful Creator and to be able to understand some of the laws by which that work is done and then to seek to discover other laws yet unknown to human lore! This is the privilege of the educated farmer.

But education brings other benefits than mere pleasure. As an example of which may be mentioned the fact that it makes the man better able to judge the value of services rendered him by his fellow-men. Nothing could be more beneficial to the farmer at the present day than to be able to judge correctly the value of what each legislator is doing for the advancement of his interest; for not a few of the seats in our legislative halls are occupied by men who obtained them, not be-

cause they are worthy legislators, but because they were able to buy the votes of the unprincipled and to attract the uneducated by the glare of their assumed worth. That a liberal education should be given to every honest farmer boy as an instrument of defense against these sharks of our peace and prosperity is certainly so apparent to every one that it needs no further discussion here.

I wish to bring to your consideration yet another purpose for which the farmer's boy should secure an education. That purpose is, that he may be better prepared to fill whatever position God may intend him to occupy, whether that be following the plow or some other vocation. The farm produces not only material for the sustenance and growth of the animal body, but it produces also material for the maintenance and growth of society. Whenever a man of extraordinary genius and power has been needed to carry some nation past a critical period in her history, God, in His all wise Providence, has prepared such a man. But from whence has He procured the lad which he wished to prepare? From among the pale, enervated lads nurtured on the foul air of our crowded cities? No, but He has chosen a lad with a strong body nourished on the pure air and healthful exercise of country life—a lad with such a body as is fit to support the growth of a powerful intellect. For examples I point you to the men who have guided our own fair nation through the dark periods in her history—to the men who have been the instruments in God's hands of forming and maintaining more freedom to its subjects than any other government on the face of the earth. Notice, if you please, the one who guided our Union in her first uncertain trial. Who was he? Twas he, who now—

“By broad Potomac's silent shore
Better than Trojan lowly lies,
Gilding her green declivities
With glory now and evermore;
Art to his fame no aid hath lent;
His country is his monument.”

Twas he whom we lovingly call the father of our country, George Washington, *a country boy who got an education*. When that awful tempest of civil strife burst upon our ship of state with all its terrible fury and seemed about to dash her to pieces on the rocks of secession, who then was called to the helm to guide her safely through that furious storm? Need I mention his name? Fame has written it with indelible ink in the book of eternal remembrance. It shines forth with ever increasing luster in the history of a reunited nation. Those who were enemies in war, now vie with us in paying tribute to that name that expressed “charity for all and malice toward none.” Who is this hero of the nineteenth century who guided our nation safely through that dread hour of peril, do you still ask? Abraham Lincoln, our “martyred president,” *a country boy who got an education*. There is another on our list of presidents whose example of success has caused a worthy ambition to rise in many a poor boy's breast. It was he, who, when the news of Lincoln's death sent an arrow of gloom through men's hearts, comforted our sorrow-stricken nation with those ever memorable words, “God reigns, and the government at Washington still lives.” He, like Lincoln, met his death at the hand of an assassin. And the whole world seemed united closer in a bond of common sorrow when the sad news of America's grief over the loss of her noblest statesman was announced to the nations of the earth. Guess you not to whom I refer? James A. Garfield, *a country boy who got an education*. These are but three from the numerous examples that might be produced to show the immense success that attends the *country boy who gets an education*, but I think they are sufficient.

O, boys, you who are so fortunate as to be enabled to enjoy the pure air and

healthful exercise of country life, get an education. You cannot all become Washingtons, Lincolns, or Garfields, but God has positions for you to occupy just as surely as He had for them, and you can fill those positions, whatever they may be, all the better by having a liberal education.

Get an education, and fill your positions in life just as faithfully as these men did theirs. Then your fellow-men will speak your names with admiration and esteem, and you will be proud to have been *country boys who got an education*.

OUR COUNTY SCHOOLS.

By MRS. P. W. PARKHURST.

[Read at the Sandusky County Farmers' Institute, held at Clyde, Jan. 20 and 21, 1896.]

"Our common school system is one of which every citizen is justly proud, distinctively American, clearly meritorious it has become the bulwark of the existence of our nation."

During the latter half of the century what rapid strides have been made, what advancement along all lines, and yet the country schools of thirty and forty years ago, were a power for good. Around them centered the social, intellectual and religious life of the whole community.

But teachers' institutes, normal schools, books, magazines, and educational journals, reading circles, farmers' institutes, and kindred influences have worked a wondrous change. No longer is each school district isolated from every other—a little world all by itself—but the older pupils are away attending our academies and colleges, and bringing back with them, on every return, bright glimpses of the outer life. Our educational system thus budded, grew until it was ready to burst the bonds of traditionary methods and fly to something, it knew not what, when leading educators who had given more and more attention to ways and means for the improvement of country schools began to interest themselves in what was at first known as the "Warren County Movement" and later in Township Supervision. To such an extent were these measures advocated by such men as Superintendent Lukens, Dr. R. H. Holbrook and others, seconded by the more progressive teachers throughout the state, that our legislature has seen fit to enact what are now known as the Boxwell law, and the Workman law. The former is the outcome of the "Warren County Movement" and provides for the examination and graduation of pupils from the country schools and their admission, on diploma, into any high schools in the county; the law also provides that the tuition may be paid by the township in which the pupil resides. The latter or Workman law has been so severely criticised by farmers in their institutes and grange meetings, by teachers in their associations, and by the press, that it was feared by some of its friends that it would be repealed. Now, however, after three years of trial it is beginning to grow in public favor. It provides for the more efficient organization of the country schools, making the *township* the unit, rather than the sub-district. It provides for the grading and classification of the schools, and for the employment of a township superintendent. These in brief are the provisions of the two laws that are going to do more for the district schools of Ohio than any other law or laws that have been passed in the last twenty-five years, and it now remains to be seen how this is to be accomplished.

I shall devote my time more especially to the Workman law and particularly to that feature of it relating to township supervision.

Second in importance only to the careful selection of a competent teacher is the organization and classification of the school. For every school in the township there should be a graded course of study, (or better still for every school in the county), which should definitely mark out all the work to be done in each term or month, by each class in the school, telling at just what period of his school life the child should begin the study of arithmetic, geography or grammar, and just how far he should progress each term in each of his studies; giving valuable suggestions to inexperienced teachers as to manner and method of teaching. Thus in a course of study at hand I see: "For Fourth Grade; Reading, Fourth Reader began and completed to page 175. One recitation daily. Practice all exercises on emphasis and inflection. Drill pupils on giving the thought of the lesson in their own words. Begin the use of dictionary. Pay special attention to punctuation, language etc." Turning back a few pages I see: "Number work, Third Grade," which means the third year the child has been in school, and under this heading I read: "At the end of this year pupils are expected (1) to read and write numbers correctly up to one thousand; (2) to add and subtract, from one to nine, to and from numbers ending in any digit; (3) to work examples in multiplication and division and to know the tables, through to twelve; (4) to be able to reason out and work concrete written and mental problems involving all the processes learned in this and previous years." In this way each year's work is carefully planned and plainly marked out and a teacher going into a new school knows just where to begin his work. By reference to this course of study he can tell just how much work has been done by his predecessor and start his classes the first day at the place where the former teacher left them, and no time is lost. The child starts to school at six years of age and at fourteen is ready to be graduated, and enter the high school. He has wasted no time in going over the same ground several times with each change of teacher, but has gone forward as uninterruptedly as have his cousins in the town and city schools.

The thought may here present itself to some minds that by this system the bright pupils will be kept back while the duller ones will be forced ahead too fast, but not so. For the especially bright pupils there is provided a course of supplementary reading which was adopted by the board of control of this state at its last meeting, and the duller ones may sometimes have to remain two years in the same grade. A course of study is also valuable in that it secures a full round of studies for mental balance. We often see a boy leave the country schools a good speller and with a fair knowledge of arithmetic, but a poor reader, and ignorant of the simple rules of grammar, simply because he did not like reading, and "couldn't see no use in grammar" and would not study them.

Beyond all question the need of the country school is classification, gradation and systematic organization, but experience has proven that before we can have any system whatever we must have some one to make a system and to enforce and carry it into practice after it is made. This executive is the township superintendent, and I am glad to say that Green Creek township has not been slow in availing herself of this wise provision of the law. We have a very enthusiastic and earnest superintendent, who has already done much for the improvement of our schools and will no doubt do much more if he is given the hearty support of the township board, the patrons and teachers. For the benefit of townships which have not yet tried supervision, and think a superintendent a needless expense, I will point out some of his duties.

He should bear the same relation to the district schools that the town superintendent bears to the different rooms and grades under his supervision, and his work, though not the same, is similar to that of the town superintendent. He should, under direction of the township board of education, prepare a course of study suited to the length of the school year and the branches taught. He should hold a

teachers' meeting once a month, to lay out teachers' work, and instruct them therein, and assign to teachers topics for papers and discussions. He should visit each school in the township as often as is consistent with his other duties, giving special attention to young and inexperienced teachers, observing their methods and making such changes as seem to him best. He should hold examinations at the end of each term and attend to the promotion of pupils.

These are but a part of his duties, but enough to show the need of supervision. In townships where it has been tried the results have been very flattering. Increased attendance and interest, better wages for teachers, a longer school year, teachers hired by the year rather than the term, are but a few of its advantages.

The Workman law is a great step in advance for our country schools, but it does not go far enough, and is optional rather than mandatory. It is inadequate, because the superintendent who, with the small salary that townships can afford to pay, can be but little more than one of the best teachers, is not supervised at all except by a board of education. Township supervision is good, as far as it goes, and should by all means be retained, but to it we should add *county supervision*. The county superintendent, working through the township superintendent, could bring supervision to its greatest efficiency. The idea of supervision would then be at its best. It would be uniform with county organization in other matters and this would have its special advantages. Beyond this lies *state supervision*, with a uniform course of study for the whole state. The state now controls the schools; let her supervise them as well. This is already being tried in many states with most satisfactory results and, believe me, Ohio will not be far behind. We have begun at the bottom and are slowly but surely working our way upward.

There remains yet one other feature of our educational system upon which I will touch briefly. I refer to the new law allowing women to become members of school boards. Though the practical workings of this law have not yet been fully demonstrated I believe time will prove that it is a wise and helpful measure. When on every township school board there shall be found two or three women, the *motherly spirit* will prevail in the board, and in the selection of teachers the *mother heart* will hover over each applicant as if it were her own son or daughter, proud and glad to recognize those of undoubted fitness and ability, but shrinking from placing in large and difficult schools the young girl fresh from school, or boy without experience or tact, knowing full well that no amount of money thus gained can compensate for sleepless nights, worn-out nerves, and broken health. This will compel township boards to classify their schools in regard to the difficult positions, and after selecting from the total number of applicants the proper number of teachers, to place the best disciplinarian over the unruly school, the teacher of highest culture and best scholarship perhaps in the most remote and uncultivated district, reserving the easy, governable school for the inexperienced teacher at a lower salary, of course, than that which is given for a higher grade of work; this in turn bringing about the grading and classifying of teachers, and compelling school boards to frequently visit the schools and make the teacher and his methods a study.

THE FARMER AND THE PUBLIC SCHOOL.

BY S. H. MOTT, SUPERINTENDENT OF CHESTER HILL HIGH SCHOOL.

[Read at Morgan County Farmers' Institute, held at Chesterfield, Dec. 16 and 17, 1895.]

It has been my fortune to view this question from several different standpoints, and it is difficult to determine from which point of view it possesses the deepest interest.

As a child the public school was the first step in the solution of that mystery commonly called life. True I had wandered in the borders of that unexplored region, but that first day in school was the first real effort in that struggle which all are glad to continue even though success may elude their grasp.

It seems to me that the public school means more to the farmer boy and girl than to those children who pass their school days in the town or city. Children in town have that constant companionship which it is impossible for the child of the farmer to have.

The country child who is fortunate enough to have brothers and sisters is limited largely to the members of his own family for associates, and while this condition has many advantages yet it will not long continue to satisfy the craving for companions.

That poor unfortunate who has neither brothers nor sisters must simply starve for companionship unless the public school affords him relief.

To me it does not seem possible that a city child can look forward to the beginning of the school year with that eager anticipation felt by his country cousin, for the very apparent reason that it does not mean as much to him. To the former it means opportunity; to the latter, opportunity and companionship.

Why are you here to-night if not to enjoy the same companionship? No matter what your home relations may be nor how frequently you see your neighbors, occasions of the sort that bring you together as you are to-night are necessary for the fullest enjoyment of your social privileges.

As a director it has been my privilege to sit in the councils of the school fathers to deliberate upon those questions which work for the weal or woe of the children over whose interests we were expected to keep a watchful eye. There is no office that does not carry with it a very considerable weight of responsibility, and to my mind there is more devolving upon the office of school director than upon any similar office in the gift of the people.

You may smile at this statement, but have you ever known an inefficient teacher to be employed? Did you ever see a school-room that lacked the bare necessities for doing efficient work? Have you ever known a teacher to have to see to getting a broom, a wash pan, a drinking cup, crayon or a fire shovel? The like has been known. I trust that I may so stir the dormant interest of some worthy school father that an unjust conscience will be his portion if he ever again neglects his duty.

Was I a model director? That is hard to answer. There may be some significance in the fact that I held the office for but one short year.

It seems to me that people generally realize the importance of the position and that they generally choose the very best persons in their midst for directors.

The money expended in the education of your children is no inconsiderable part of the taxes you pay, and it has never been my lot to hear a taxpayer grumble at the amount devoted to that purpose, however much he might feel dissatisfied with the amount paid for other purposes.

There are many here who will never give their children any other capital than

an education, and a majority of these nothing but the education of the public school, but if you give them this and in addition thereto equip them with a sound body, self-reliance and good habits, you have indeed done well.

Would it add to the value of your farm to be able to tell a purchaser that your school was the best in the township? Is there a single person here who would take a farm as a gift in a community where there was no public school and no probability that there would ever be any? I had almost asked the question, "If compelled to go to a community where there were no churches or to one where there were no schools, which would it be?" but I will not put it, for if you find a school-house you will not have far to go to find a church.

It is well nigh impossible to over estimate the importance, to the farmer, of the district school. His children may attend church or they may not. They may perform their social functions or they may not, but the commonwealth says that they must attend school whether they will or not. It is one of the very few things working for the general good that the state makes mandatory.

It is from the standpoint of the patron that we feel the deepest interest in this subject. If I should say that it is when the school officer and patron are one and the same person that we get the best results I simply state that which will be accepted without discussion. Pride in your school, a desire for the promotion of the general welfare and an exalted patriotism may be relied upon to accomplish much; but after all there is no unfailing interest like that of the parent in the child. It is to you as patrons of the school that I would address myself.

There are none among you but would hail with delight any suggestion that would render your schools more effective. The laws that are passed from time to time having for their object the greater efficiency in the schools may or may not result in beneficial changes depending almost entirely upon the spirit in which they are received and enforced. You may employ an inefficient teacher. That is a calamity that will occasionally overtake you and one which no human wisdom can entirely avert. But there is one constant quantity upon which you may rely with absolute certainty. It is a condition which is under your control, and that is your *own personal interest*.

Parents, do you love your children? Did it ever occur to you that with a heart welling over with affection for your child that, for want of some manifestation of that love, he might literally starve for what you can and ought so freely to give him? How is the child to know what you feel for him if he sees no evidence of it? What does it signify when the hurt child comes to you, climbs upon your lap and says, "Kiss it, mamma?" Does it not mean that he cares more for that little exhibition of your interest, love and sympathy than to have the wounded finger tied up?

Is it not just possible that the teacher might have remaining in his nature some trace of that same sort of feeling, exhibited in childhood? True, you pay him for his services and you are entitled to his very best efforts, but from a purely selfish standpoint it will pay you to be interested in the work of the school, so deeply interested that the school-room may be gladdened by your presence. It will please the children and will do them good, and if I mistake not, your show of interest will be appreciated by the teacher.

It is one of the measures of a teacher's fitness that he be able to gain and to hold the interest of the pupils and parents, but that law of the physical world that "every molecule of matter attracts every other molecule" is not more true than that there must be a mutual interest between parent and teacher to make the school a success.

It means much toward the success of the school for the parents to furnish the children with books and all other necessities, to urge them to be diligent and obedient, and to give the teacher your moral support in all things tending to promote the welfare of the pupils; but all this falls a little short of your whole duty. You lack yet a little of the actual contact necessary to insure success.

There is a custom in many communities of waiting until the last day of school to show the interest you feel in your children. It is perfectly right and proper for you to be present that day, but don't you think it a little late for your presence to work for the good of the school? Pardon me, good people, if what I say seems to "rub against the grain," but the school properly conducted is not meant for the *entertainment* of the parents, but for the instruction of the children, and it is the manifest duty of every parent to see and know how his children are being instructed.

Some may wonder whether the writer is of the opinion that the teacher has nothing in particular to do with the success of the school and whether all depends upon the parents. Not by any means. But have you not tried leaving the matter almost entirely with the teacher long enough? Are you satisfied with the results? I know that the idea here suggested will bring about good results and am almost sure that you agree with me.

This appears to me to be an important step in the solution of the public school question from the farmer's point of view.

Finally, from the standpoint of a teacher, the lights and shadows thrown by the farm and the district school are unequally blended. The light is greatly in the ascendant; the shadows but few. No other subject has for me the all absorbing interest of the public school.

I was born upon the farm, went to school from the farm, was raised upon the farm, worked upon the farm, and when my work is done may a kind providence grant that my bones may find a resting place near a little white school house upon a corner of the farm.

HAS IT PAID THE FARMERS OF PICKAWAY COUNTY TO HOLD FARMERS' INSTITUTES?

BY EDWARD C. RECTOR, KINDERHOOK, O.

[Read at Williamsport Farmers' Institute, January 27, 1896.]

I have no doubt but that almost everyone will think the subject which has been assigned me is an absurdity on the very face of it. Why, you say, of course the institutes are profitable, surely no one will dispute that fact. I myself thought when the subject was given to me that it was a one-sided question and would admit of no negative, but after more deliberate thought I came to the conclusion that it was almost the reverse. So I propose to run the risk of incurring your displeasure by taking the negative side of the question.

In the first place let us see what the institutes are for. I think they have three principal objects. First, to promote in a general way the cause of agriculture and stock-raising; second, to develop a higher degree of practical farm knowledge; third, to maintain sociability and good will among the farmers.

The institute should create a new era in agriculture and cause a revival of interest among farmers which will make their business above par in the consideration of all people. The value of the institutes is just what we make it to ourselves. We may derive a great deal of benefit from them or we may spend two days in just such a manner as to derive no benefit whatever. Many a man may go to the meetings full of determination to profit by all that comes before him and yet fail to catch a single idea which would pay him for coming.

It is the man who asks a question and receives an answer from his fellow farmer

who is most profited. And that is the main fault with us, we are too liable to sit back and say nothing and do nothing to impress our individuality upon the institute or avail ourselves personally of its facilities.

The institute depends largely for its success on local talent and we have been very lax in that respect. Papers which cover local conditions in a general way are what we want more of to make our institutes more successful. Each farmer and farmer's wife has some experience which he or she could impart to the mutual advantage of both giver and receiver. What we need, and I emphasize this remark, is more real experiences in success and failure in farm operations. But then all talk and no practice will not do.

The preacher may preach a good sermon but if his advice is not followed it will avail nothing. So it is with the farmer and the institutes.

I do not want the speakers whom the state board of agriculture sends us to think for a moment that I wish to cast any reflections upon their valuable papers which they read to us. No fair-minded man would do that. I know if we would follow some of the valuable suggestions which they advance we would be able to raise better crops and at the same time keep our farms in better condition.

It is the desultory method of following in the old ruts which I wish to assail. We admire and approve at the same time the methods which are explained to us, but when we go to put them in practice we forget all about them or if we do have a sort of a guilty conscience that it should be done some other way we are in too great a hurry and promise ourselves to try that plan the next time; so we go on year after year.

I can but plead guilty to the charge myself and I have heard many other farmers extol some favorite theory of advanced farming, but when it comes to a "show down" do the very same thing they have done ever since they have been farming. I have conversed with scores of farmers after the close of our institute meetings and they almost seem to be a unit in declaring that the past session has been a grand success and that they have received untold benefit from the same. They are honest in saying so for they think they have, but for my part I have failed to see many of those same farmers put into practice any of the grand ideas and useful knowledge which are given us at our annual institutes. There may be a few, and a very few it is, of our up to date farmers who follow some of the plans, but my paper does not deal with those few but with the average farmer of which kind you will find nine where you find one of the other kind; and these nine are helping pay for the benefits received by the one and getting no benefit themselves.

It has been explained to us from this platform how much more beneficial it is for us when we haul our manure from our stables to spread it on the ground at once and not put it a load in a place, and then go to the extra expense of spreading it, besides losing half of the strength; but without going very far from this village I can show you plenty of men who still follow the old plan, although they were here and heard that question discussed for over an hour at one of our recent institutes, and if they are fairminded men they were surely convinced that they were wasting time and profit by following in the old way. Still they persist. We all know the value of barnyard manure for our poor clay land and have been told how we can save our manure to the best advantage. While probably some of the plans advanced are not practical for the average farmer there are many suggestions for saving this home fertilizer which we could adapt to our own use with little or no detriment to our time or pocket-book and which would save us many dollars each year. We see farmers feeding their stock on a hill-side in the winter, because it is high and dry and the hill is a protection from the cold winter blasts, not thinking that while they are protecting their stock in that way they are allowing the very best properties of the manure to be slowly washed away by the rains. We have been told how to protect our stock and at the same time put many a dollar

in our pocket-books by having our feed lots arranged so we can save all the manure. How many farmers have profited by this advice? I know very few. So much for this topic which is only one among a great many.

We have been told that "figgers won't lie" and that the only way to safely conduct any business is to keep an accurate account of every thing on the farm. How many farmers stop to figure just what a bushel of wheat or corn costs us to produce it, or what it costs to produce a pound of weight on our fat hogs or cattle and thereby be enabled to ascertain the actual profit or loss of any article put upon the market? We know it is the best way to do but we just don't do it; we raise corn and raise the stock and then feed the corn to the hogs or other stock. We may be making more out of our corn than if we had hauled it to market and we may be actually losing five, ten, or fifteen cents on every bushel. Very few of us know to a certainty but just trust to luck and go ahead. Every farmer who fattens stock should be provided with stock scales and then he can tell with just a little figuring what he is doing and whether he is feeding for profit or for loss.

When wheat was so cheap, and corn commanded a good price we were told, and it was proven to us by figures, that it was more profitable to feed cheap wheat to our hogs than it was to feed high-priced corn, but very few farmers ever tried this plan but sold their wheat at a loss and fed their corn at a loss.

In keeping milch cows for our own use we have been told how to care for them and what to feed them to attain the best results. We can easily see the value of the suggestions but still continue to feed our cows on corn and dry fodder and give them little or no protection in the winter, and then complain because our more industrious neighbor makes better butter and more of it.

We have been told all about fruit culture and the benefit of spraying our trees, but most of us go on raising small imperfect fruit.

We have been told all about potato culture and nearly everyone of us goes on in the old rut and has had to buy our potatoes for our home use for the past two years. This of course was due in part to the excessive drouth, but I know several men who exercise great care in raising potatoes and they have had very creditable crops of potatoes this year. I think if we all had followed the advice given us by Mr. Nothstein on potato culture last year we would have had a much better crop of potatoes with very little more work.

We were told how much a wife should know of her husband's business but I must confess my inability to discuss that question and leave it to the conscience of these married men as to whether they profited by the advice given them in that paper or not.

I could cite many more instances but I think the few I have given you will suffice to prove what I have said that the institutes are not as profitable as we try to make ourselves think they are. I have cited a few instances where conclusive proof has been given us of the advantages of advanced farming by men who have spent many years and dollars experimenting to attain this end and now give us the benefit of their labor, but alas, as the old saying is, their advice "goes in at one ear and out of the other."

And most of the instances I have cited we could profit by with little outlay of time or money.

We are not ready yet for advanced farming but let us all endeavor to improve our methods as soon as possible and if we cannot now do the best thing do the next best thing and we will in time work up to the perfect way.

Farmers must learn that it is the best article that commands the best price and strive to produce that article.

There is a bright future before the farmer of this country and he is slowly awakening from the lethargy in which he has so long been. If we could only put into practice many of the practical ideas which others have learned by experience it would not

be long until farming and stock raising would be considered above drudgery among all classes; and with increased prosperity will come increased power and we will be able to assert our rights which have lain so long dormant, then we will have a more influential voice in the making of our laws and help put an end to class legislation.

We should have the law makers of our government understand that we propose to uphold our rights and maintain them unitedly.

When we can do that we can expect our business to have equal rights with all others and not until then. There is no way to attain this end more speedily than by each one of us striving to make the institute more profitable to ourselves.

GIVE THE BOYS AND GIRLS A CHANCE.

BY PRES. J. M. DAVIS, RIO GRANDE COLLEGE, GALLIA COUNTY.

[Read at the Gallia County Farmers' Institute, held at Centenary church, December 4-5, 1895.]

The word *chance* has various meanings. One of these is *opportunity*, a combination of conditions favorable to the accomplishment of worthy deeds and the enjoyment of desirable experiences. This is the sense of the word appropriate to this discussion.

Are we to believe that, in any important degree, the chances of the boys and girls to possess and enjoy those things to which they have a God-given right, are abridged by their parents and by others who control or affect our social condition? No doubt of it.

To prove this, let a plain statement of the rightful chances of the boys and girls be candidly compared with their actual chances.

Our boys and girls have a right to begin the race of life without being handicapped by unnecessary bad inheritances, physical, mental, or moral.

Our bad inheritance from the faults and follies of our ancestors, limits our power to bestow perfect organizations upon our children. Our inability to pass this limit is a misfortune to our descendants, but not a crime in us. Our crime is in adding conscious and avoidable evils to the already sadly imperfect condition. So far as our personal life as parents is concerned, our children have a right to bodily systems that do not bear an ineradicable taint drawn from alcoholized, nicotinized, gluttonized, or debauched parental organizations.

They have a right to mental systems that have not been perverted in their origin by the perversions and passions of the parental mind.

They have a right to such an original moral constitution and moral bent as nature beneficently transmits to the children of those whose thoughts are calm and broad, whose affections are chaste and enduring, and whose wills have been seated on the throne of imperial power by steadfast loyalty to good principles, by resolute and victorious resistance to bad solicitations, and by continual refreshment and invigoration by the grace of God.

They have a right to that clear outlook upon life which is gained from the windows of a home in which love, duty, knowledge, industry and religion are the perpetual and far-beaming lights.

They have a right to an education in the public schools of our land and in its higher institutions, begun at the proper age, and continued with all possible faithfulness and regularity to the extreme limit justified by the circumstances of each case.

They have a right, from the dawn of their ability to labor at all, to such training in the performance of appropriate labor as will render them helpful, assist in making them self-controlled, give them reasonable views of life's realities, and start them upon the independent career of their own manhood and womanhood with no disposition to try to make the journey of life as dead-heads.

If, through bad examples around them or inherited dispositions in them, they should be reluctant to labor, or show want of energy, application and perseverance, parents must not relinquish their aim. By example, persuasion and other enforcements the children should be held to requirements which, though not severe, should be adequately strict.

To do this, it will not generally be necessary for the parent to give vent to paroxysmal objurgatory exhortation, to hold up his own youthful prowess and accomplishments as a shining light before the filial eyes, or to use as the machinery of incitement the lithe and tenacious twigs that grow in the hoop-pole orchard. Although these methods of alluring juvenile sluggishness and self-indulgence to a higher and better way are not obsolete, let us contribute to their speedy obsolescence.

The boys and girls have a right to the enjoyment in their homes of the refining influence of books, papers, music and musical instruments, pictures, and all reasonable decorations and conveniences, according to family circumstances; how these things increase their self-respect, their attachment to parents and home, their desire and purpose to make their goodness and usefulness in after life correspond to their joys and advantages in childhood.

Will not all these things cost money? Yea, verily. Where shall this money come from? I do not know. Indeed I feel sure that much of it will never come from any place until the views and habits of many people are greatly altered. Perhaps this discussion may accelerate the happy change in this direction which is going on in many a heart and home, and start it in others. May the time come when not a dollar of the fairly inherited or fairly earned possession of a single family in the land shall be spent on an unnatural appetite or a vicious indulgence, for the pampering of a vain pride or a false ambition, for the accumulation in bulk of an ultimate fortune which would better go into the minds and characters of the boys and girls as they grow than to be dumped into the pockets of heartless and brainless heirs.

If we could have for ten years the full benefit of the money unwisely and wickedly spent, we could put into every rural home a dictionary, an atlas and gazetteer of the world, a dictionary of names and dates, an encyclopedia, a collection of miscellaneous books, and a reasonable number of other books that would not only increase the knowledge and wisdom of farmers as farmers, but also help to set in their true light the advantages and attractions of rural life as contrasted with the baleful glitters that lure to cities so many who ought to stay in the country. With these books we could put a local paper, a general newspaper, the religious organ of the church with which the family is allied, an agricultural paper, an illustrated magazine, and a magazine devoted to current history and discussion. We could put a piano or organ in each home and a picture on each wall. What a pity that this heavenly vision should not become an earthly reality.

I have mentioned the crowding to the cities. But I recognize the fact that the country cannot retain all its young people. This steady migration from country to city seems to be an irresistible and irreversible movement of modern humanity. It lays upon the country people the task of preparing their children to be independent and masterful, and not mere underlings, in the crowded life to which so many of them will go. Hence the duty of educating them thoroughly and liberally. Such an education is attainable wherever there is mental ability to appropriate it and determination to get it.

In our own county, in a beautiful rural situation, there stands an institution which has already lifted hundreds of Gallia county boys and girls to an eminence otherwise unattainable by them. May our boys and girls so prize Rio Grande College as to find it one of God's mighty levers to lift them to higher levels of wisdom and service. May an increasing number of parents realize the aid it can give them in giving their boys and girls the best chance.

The boys and girls should have a chance to indulge in the joy of personal ownership and the responsibility of independently transacting some business for themselves. The desire to have something of one's own and to use it as one's own is natural and healthful. The farmer's child should in due time have his own animals, vehicles, implements and pieces of ground. What he makes, he should be permitted, with affectionate counsel, but not with arbitrary dictation, to control and expend. This increases the beneficial effect of production and ownership.

If the child makes bargains or expenditures that in your judgment are unwise, better let him learn the lessons of experience than cripple his judgment by denying it a chance to act. It might be well for some older people to recollect that their own present infallible wisdom in financial and practical matters was not an original endowment, but an expensive and tardy acquisition.

Farmers should make their homes tidy and keep their farms as neat and productive as possible. This gives the boys and girls a chance for that self-respect and innocent home pride which are so joyful, inspiring and helpful to their better natures.

In every rural neighborhood there should be whole-souled and liberal support of religious work. Consecrated and able preachers are of inestimable value in the country. The bright, aspiring, undissipated boys and girls of the country make an inspiring element in a congregation. In all their wanderings hereafter, our children should be able to cherish with equal fondness of recollection, the home of their childhood, the sepulchers of their kindred, and the sanctuaries of their God. Let the social life be as refined, warm, and generous as possible; surrounding society is one of the most powerful agents in forming youthful character.

THE WELL-ROUNDED LIFE.

By MRS. C. L. HILL, BERLIN HEIGHTS, O.

[Read at the Farmers' Institute held at Sandusky, Erie County, January 17 and 18, 1896.]

Although specialists are filling the highest places, there is a certain all-round culture that may come, indeed must come, into every well equipped life.

God commands the cultivation of all our powers that we may do better work with them. We find the college strongly advocating the ball game, the gymnasium and physical culture in every way to promote the good health of the student, while by stimulating the growth of the Young Men's Christian Association, the Young Women's Christian Association, the King's Daughters and the Christian Endeavor societies within its halls, the college is receiving an uplift along spiritual lines, that cannot fail to show a higher moral development as the years go on. The idea of mutual responsibility among the better class of students over the more frivolous and thoughtless is like the mutual help of the older children in a family and must add greatly to the moral power of the faculty. To what heights may the intellect aspire if assisted by perfect health and moral worth.

From our very midst have gone forth those whose well-rounded lives have made them capable of taking up special work with unlimited success, and the teachers who helped them to unroll the mysteries of their special work and came to know them well were ready to give them such recommends, when opportunity offered, as should lift them into the most honored positions; positions where their fine spiritual insight, their deep moral character and their thorough culture of heart were appreciated as essential requisites to their specialty.

If young men or young women are longing for positions of trust, they must make themselves worthy of filling them. If any father or mother has high aspirations for the child they can inculcate noble character and true hearts—"without money and without price"—by faithful precept and example, and know that every manager or employer worthy the name asks these requisites of his workmen. It has been well said that "no influence can be counted small that goes toward making one 'straight man' for these crooked times."

There is one thing that I fear we often neglect to be thankful for, and this is that we have to work. It is, however, a great redeeming power in the human family and worthy of warmest gratitude, but as a farming community we are inclined to let our physical work so fill the time that even our evenings cannot be used for mental improvement. This is a natural consequence of our special line of work, and it is only as we become thoroughly awakened to the needs of our cultivation that we will grasp the passing moments. We must be strong to rise above discouragements, nor let our good resolves pass without being acted upon, for if we often recoil from making an effort, the effort making power will soon be gone. What is effort at first, however, will pass into delight as one progresses. The earliest forms of life show always an element of aspiration and a contention against difficulties. The tiny plant forces its way up through the weight of soil and struggles upward in opposition to the very laws of gravitation.

It is said of the artist Gerome that he never gives up to discouragements, and those of us who saw his glorious "Golgotha" at the art loan in Cleveland last spring and felt the impressiveness of the scene, could not help realizing the infinite perseverance of its author. Indeed, we will find this to be a distinctive trait of those who have become eminently successful everywhere. From a little book I gathered these words: "Great men are, after all, only other men, and it is a great and rather startling discovery when a man sees this for the first time, that even so-called great men lived on the same earth that we do, under the same skies, eating the same bread, sharing the same lot, suffering like troubles and were in every way surrounded by the same conditions that we are, and that, in fact, they were and are only earnest editions of ourselves. What keeps any man from becoming great? Want of earnestness, that is all."

A young lady, who aspired to fame as a musician, went one day to Rubenstein for advice. She played for him, then asked: "What shall I do?" "Get married," was his brief and quenching reply. This answer was given very much as people who have failed in business and everything else, are told to go to farming, but my ideas of the amount of cultivation and earnest preparation necessary for wifehood and motherhood are very similar to my ideas of the preparation essential for a good farmer and the earnestness with which we should take up this preparation should be worthy of a Gerome. The not taking time to upbuild the inner nature is like not taking time for the morning prayer, when the whole business of the day is confused without it.

Life is perplexing enough at the best and we should do all in our power to help the flowers to blossom by "the paths that thread our working days." Ruth Ashmere says: "It is ours, not only to make our life as good as possible, but as easy as possible. Easy in the right way, not by neglecting your duty, but by taking up the burden with a smile; and you will find how much easier it is to carry. Arm

yourself with hope and then if to-day seems one of trouble we can think about to-morrow and hope that it will be pleasanter."

It is not necessary that farmers' daughters and wives should be lacking in culture and refinement. Many of their daily tasks have been done over and over again so many times that it is a real pleasure to be learning something in the meantime to take up the mind. The poem or wise saying may be pinned to the wall before you as the dishes are being washed or the book laid open upon a table nearby, and catching a line now and then as you work, the beautiful thoughts will become yours and you will be richer for time and eternity.

If the amount of work on the farm necessitates the hiring of additional workmen, there must also be additional assistance in the house. As my husband very aptly remarked: "A girl at two dollars per week is far cheaper than a doctor at two dollars per day."

One thing that I have learned from bitter experience is how to rest; and it is worth while to have learned even from bitter experience if one can only help one's friends thereby. Don't wait until you are so completely fatigued that the overwrought muscles and exasperated nerves can do nothing but cry out in agony. Real rest is then out of the question. Rest while you read a short magazine article or a chapter in some helpful book. This, if taken in time, will not only allow the needed rest to back and limbs while the toes are warming but prove an invigorating tonic—something to think about—so giving one an uplift intellectually and spiritually even upon the busiest days. Indeed, I think we often feel more benefit derived from a few casual readings when the work is monotonous and we have abundant time to consider them, than when we have leisure for more extended reading. And we will surely find at the close of the day that the increased celerity of movement gained by the needed rest will have amply made up the lost time, and instead of the woe-be-gone, jaded looking creature when the children come home, there will be a bright cheery face and a fresh thought to bring forth, and these last, both husband and children will appreciate even more than the work accomplished. This recipe has been tried and is worth trying again. We pick up Emerson's Essays and read: "A man passes for that he is worth. What he engraves itself upon his face, on his form, on his fortunes in letters of light which all men may read but himself. Concealment avails him nothing, boasting nothing. If you would not be known to do anything, never do it." We take up the Bible and find so many satisfying passages to quiet our anxiety about the work in hand or the children at school; and can there be anything more restful than the twenty-third psalm? Its every rhythm is a specific for tired nerves. I am so glad we learned so many Scripture verses in the Sunday school when I was young, for now even though the glasses are forgotten there is a store of treasured peace for memory to draw upon to fit the moment and the mood. Surely there is no need of worry which is said to exhaust the system beyond anything else, for while nature provided for normal, healthy action, worry uses up vitality more rapidly than nature can reinforce it. It is the friction in the machinery of life that grinds away the very substance. Happy are we if we may carry with us the oil of Scripture verses to quiet the squeaking wheels.

A friend told of a caller who had been relating to her tired ears all the ills it had been her misfortune to pass through. "I just cannot look upon the bright side of life," she was remarking, "because there is no bright side." "Then my dear woman," quoth the hostess, "you must polish up the dark side."

Perhaps we take up Tennyson's poems and let the book fall open to some precious stanza, for I think when we are very tired we love to talk with old friends and save the new ones for our fresher moments. We let the book fall open, and it seems to open very easily to that exquisite truth which the hero of "The Princess" pays his mother:

"Not learned save in gracious household ways,
 Not perfect, nay, but full of tender wants;
 No angel, but a dearer being, all dipt
 In angel instincts, breathing Paradise,
 Interpreter between the gods and men,
 Who looked all native to her place and yet
 On tiptoe seemed to tread upon a sphere
 Too gross to tread . . . Happy he
 With such a mother! faith in womankind
 Beats with his blood, and trust in all things high
 Comes easy to him."

Is it not an inspiration to live the most pure, unselfish life that it is in our power to live before the growing man, if by so doing "trust in all things high comes easy to him."

In the realm of poetry, too, blessed are we if we have gathered into our memory's casket, through youth and middle age, a bountiful store. Rare poems once learned are an inheritance of beautiful thoughts, to illustrate every common thing or glorify each humdrum task, for at each repetition some new thought will be presented and unfold itself as we grow to comprehend its wider meaning. My mother learned them at her spinning wheel and had a wholesome moral to repeat for each shortcoming which answered well the place of the proverbial rod, which she never used. Literally speaking we were trained with Scripture texts and moral precepts from the older poets of whom Pope was chief, and sung to sleep with the hymns of Watts, Wesley and Toplady.

The world is so rich in literature that some of the most precious volumes are almost given away. As we cannot meet the great and good without being impressed and made better by the contact, so we cannot read their words of wisdom without becoming wiser and nobler, and this touch of wisdom and nobility widens and radiates through all our family circle and so on and on into the great world around us. Mothers and fathers, sons and daughters, can we afford to let the days pass without being thus enriched? The seers of the ages are knocking for entrance and will sit with us and ours around the evening lamp, thrilling us with lofty purpose and wise resolve, will we but bid them enter.

We must catch weekly inspiration from the church and the occasional lecture. As we need to have positive convictions on some subjects, we must be able to think and give a reason why we hold them. We must attend occasionally a Sunday school convention or a teachers' association, that we may meet those who have bright and enthusiastic ideas of teaching children. There are those who have tried experiments for us and know whereof they speak. Our children are so diverse in talent and temperament that we need the wisdom of the sages to understand their requirements, nor need we ever hope to fit each one into the prescribed square of our ideal training whether he be a rhomboid, a sphere or an isosceles triangle. However, if we are wide awake to the necessity of developing the natural gifts of each individual and making him master of them we shall find gleanings in every field, and the Christian world is so ready to help us now, that in these conventions of which I speak they leave for us whole bundles of ripened grain, and we may glean as did Ruth in the field of Boaz.

Friedrich Froebel, the father of the kindergarten, who made the child study a specialty for half a century, taught that "the making of character should be the first thing and knowledge the hand maiden of goodness," with the idea that if the child becomes interested along right lines he will to a great extent educate himself. Miss Peabody says: "For the youth who has learned to think and is eager to know, all difficulties have vanished."

Our city friends buy paintings at fabulous prices, feeling themselves well repaid in the cultivation of a love for the true and beautiful in the family. And they are right, but here about our country homes there are landscapes as beautiful, there are sunsets as glorious, which many of us never even stop to look at, or if we do, only to give them a passing glance. We lose many of the finest impressions that might be ours without borrowing from poet or painter would we but drink in the glories of our autumn sunsets and the dreamy beauty of the starlit evenings. Shall we not with all eagerness lay hold upon and learn to appreciate more and more

"This richer life where beauty
Walks hand in hand with duty."

To those of us who have aspirations for growth and who show in the very fact of coming together here a longing for better things, there is a work in the outlying world around.

Emerson, in abject mood about the variable-ness of society, said: "Civilized man built a coach, but he has lost the use of his feet and his note book has impaired his memory." But if we go forward with all eagerness, not forgetting to lay hold of the small opportunities as well as the great, may we not, in these pressing times make use both of the coach and feet, note book and memory in rounding our national life. There are short distances for our feet to carry us, there are innumerable points for our memory to hold that have found no jottings in the note book; and if we would do our part in infusing the leaven of righteousness, we must fight the enervating influence with which our love of leisure besets us and take up the improvements of our advancing civilization as they come, as so many helps to the furtherance of God's great plan in the world; making use of both note book and memory to show us that the powers of evil have equal access to these improvements and are putting forth their energies whether we sleep or come valiantly to the rescue.

We will not stop to argue the question whether we might or might not have been better in a simple state. We are to take the world as we find it. Cowper says:

"God gives to every man
The virtue, temper, understanding, taste,
That lifts him into life, and lets him fall
Just in the niche he was ordained to fill."

The commission to us is, "Go ye into all the world," and surely the field is wide enough to claim not only the good walker for the hamlet by the way, but every modern improvement for transportation from the bicycle to the limited express. God grant that the time may soon come when rapid transit and slow be wholly consecrated to His service. There must be a certain individuality, however, in all this. There is given to everyone his work. Do it! Every day I am more and more convinced of the absolute necessity of personal responsibility. A wise man who spoke to us of the saloon keeper across the way who was selling in open defiance of local option, the direct will of the majority, said that he was guilty of treason as certainly as he who fired upon Sumpter and should receive the same punishment at the hands of the law. Our best men met together, they formed a citizens' league, they pledged money, they talked nobly, but not until one man arose and said, "I go," was the sword of the law drawn in our defense against an enemy more powerful, more bloodthirsty, more degrading than the secession and slavery of '61. God help us to "hold up his hands that the battle may go on."

We must not close without taking up that cultivation of the heart "that widens into all the sweet accessories of manner" and accentuates the spiritual, the moral,

the real life; blending them in one to form that wondrous thing called character, the motive power that wields our destiny. It was said of Lincoln that he had a heart as large as the world, but there was not room in it for the memory of a wrong. May we not hope that the coming president, the nominee of '96, may be such an one.

H. Clay Trumble, in his worthy little volume, "Ourselves and Others," gives a striking illustration to prove the assertion that "everyone is in a sense our superior and deserves our courteous recognition as such." If, for example, the president of the United States should stop to have a street boot-black polish his boots, then for the time being, that boot-black would be the chief actor in the interview. It would be for the boot-black to inform the president where to rest his foot, and it would be for the president to conform to his wise suggestion, and if the president did not show a proper deference to that boot-black in the boot-black's sphere and hour, did not indicate by his speech and bearing that he recognized his temporary dependence on the boot-black's skilled service, he would, so far, show himself to lack one of the essential qualities of the first gentleman of the republic. If, on the other hand, that boot-black should pride himself on his temporary superiority to the president, and so fail to show due deference to the chief magistrate of the nation, he would evince his lack of an essential quality of a good boot-black. And so all the way up and down in the social scale of life each should be prompt to esteem the other better than himself, in the other's fitting and timely sphere.

Two summers ago there came into our home for a three days' visit an old friend and schoolmate who exemplified so beautifully the power of courtesy. She made herself interested in the plans and ideas of each member of the home and always had a way of making you feel that by allowing her to do some little helpful service you were conferring a favor upon her, and during the whole time she spoke no word against anyone. The whole family joined in pronouncing her an ideal visitor.

It is sympathy we need, tender loving sympathy with the dear ones in the home and in the world around. Certain experiences have come to me in these later years that have thrown an entirely different light on the doings of others in times past, experiences that I now can look upon with gratitude, in spite of their bitterness because they have broadened my sympathy.

Encouragement is the key note of helpfulness and we can only encourage in proportion to our sympathy and loving kindness. Do the kindly act; lay aside the work in hand and attend to the hole in the mitten that has caused the cold fingers. A dear little fellow on hearing the story of Sodom said thoughtfully: "It would have been a good deal worse if Lot's wife had turned to pepper." Poor child! he must have had memories of some peppery maiden aunt. We won't allow that the mothers are ever that way. Let us take time to be pleasant; to speak loving words. Some one has said, "When our dear ones have gone from us, our foolishness will seem more wise than our best wisdom." The wealth we are accumulating will be a doubtful blessing to the son who is a stranger to us.

Longfellow wrote his "Psalm of Life" for himself. He was a young man, and it was his own aim and purpose in the world. He did not even intend it for publication, but being afterward asked for a poem for a popular magazine, he let it go and it touched an answering chord in every noble heart. He said that when in England, a noble looking workingman said to him, "Are you Professor Longfellow? May I ask if you wrote the 'Psalm of Life?'" He answered that he did, and the man said: "Would you be willing, sir, to take a workingman by the hand?" He says, "I extended my hand, he clasped it, and never in my life have I received a compliment that gave me so much satisfaction." He was at that very time returning from a visit to the palace, to which he had received the honor of a special invitation from the queen. Surely, he had God's way of looking "not upon the outward appearance, but upon the heart." Longfellow was indeed truly great

in that he touched the heart of the world with a divine counseling and by his heart-felt sympathy has helped it to be in earnest.

In the language of Bishop Brooks, "You can help your fellow-men, you must help your fellow-men, but the only way you can help them is by being the noblest and the best man that it is possible for you to be."

The Rev. Vincent, of Sandusky, in his excellent address before the Sunday school convention at Huron, gave as an illustration a story of Samuel Adams, who was so thoroughly in earnest in those trying times before the revolution. It seems that some ambassador from the king had written him that Samuel Adams' earnest eloquence against the passage of a certain important measure was more forcible than anything beside. The king immediately sent a message to Adams urging him to desist and come to England where he should receive a good home and lucrative position. But Adams answered, "I have made my peace with God. I am consecrated to my country and cannot be bribed even by the king." Here Rev. Vincent asked the question: "Was not Samuel Adams' joy an hundred fold greater than if he had been a traitor—a Benedict Arnold?" It is not common things that we receive for being true, but a God-given glory that will gild the commonest work in hand and make it noble. The having done what is right, having done the best one can, gives a complacency, an exhilaration that lifts one out of himself and spans the humblest duty with a rainbow of promise.

I love to look into your faces and feel the wave of sympathy and loving kindness that comes up to meet me as I speak of these things so near to all your hearts. We are a common brotherhood, we have come together for the same noble purpose, that of receiving into our lives whatever good we may from the experience and precept of others. God grant that we may often be found in this receptive state. Could this be always so we need have no fears of time or eternity. It is only when we permit the stubborn "don't care" spirit to rule our lives that we fail in farming, housekeeping or religion. We throw off the admonitions that come to us that we may have peace in doing nothing, in thinking nothing, instead of listening and doing, and so receiving the peace that passeth understanding. We are here to-day as listeners, every one, with more or less earnestness and willingness to take into his or her life the lessons that are presented, and on this mutual ground shall we not shake the hand and speak the word of greeting, making new resolves to join in the support of every improvement that will make us and ours and those about us wiser and nobler?

HOME AND HOME MAKING.

By MRS. V. A. BROWN.

[Read at the Preble County Farmers' Institute, held at Camden, Feb. 21 and 22, 1896.]

The architect in arranging plans for a building whether commodious or otherwise emphasizes his specifications in regard to the foundation; this he insists must be well laid, broad and deep, and the material used of the best quality obtainable, for upon these particulars depends the safety and utility of the superstructure.

A wise Creator in planning the structure we call society, has founded it upon the grouping of humanity into families, an arrangement in perfect harmony with all the conditions and essential needs of human life, and in every way adapted to bring out the best that is in man, and give to him the greatest possible enjoyment. One of the conditions necessary to the better development of family life is dependent upon a separate abode. By this is meant, not simply a shelter or house, but a *home*. The

terms used are not synonymous. A house may be to its inmates a shelter only, or a home, as they choose to make it.

The ideal home—the christian home—is an institution, a royal commonwealth founded upon love. The first home established so long ago in Eden has been succeeded by a countless number—some approaching almost to completeness, then again existing only in rudimental forms. In proportion as barbarism prevailed the home degenerated and lost influence. Sometimes indeed, the fire upon the hearth-stone became quite dim, but because the family as an institution bore the impress of the Hand Divine, the embers held life and were fanned again and again into a glowing flame by the breath of civilization. In a low state of society especially where nomadic habits are the rule—the homemaker is degraded and robbed of the power and will necessary to the improvement of self and surroundings. If you know the estimate held of the home and the social standing of woman, you can readily determine the degree of a nation's civilization. Ancient Egypt alone of all oriental nations, stands out in bold relief, against a dark back ground, as an exception, when measured by the standard given. Historians of Greece and Rome, at times give descriptions of homes that seem to have been endowed with a perennial charm. Yet over against them might have been placed a long array of an opposite character, proving the former to have been the exception rather than the rule. The feudal system, which was evolved out of the ruins of the Roman empire after its destruction by the Northmen, brought to light new institutions and new life. The state was subdivided into sovereignties, whose lords made war upon or alliance with each other as they chose. Their castles became fortresses for defense and in these each family lived in complete isolation. The wife had charge of the castle during the husband's absence and also became his representative, bearing the responsibilities of his rank. Aside from this she was fully intrusted with matters relating to domestic life, the training of children and the forming of the home.

These responsibilities gave to woman dignity, courage, and self-poise. Slowly a change was effected. While the lords of the castles were engaged in war with each other, the women were occupied in gentler pursuits, spinning and weaving with their maids, developing family life and spirit and cultivating softness of manner. The atmosphere surrounding the home became in time so filled with its influence, that all who came within its reach were affected by it. Out of the new system came two words never to perish, courtesy and chivalry. More than that, the kingdom of home, with woman as its queen, was, for the first time in the world's history recognized as an influential power; a power which has increased as the decades have passed until now some one says, "Nothing worthy of the name could long exist without the home." The boundaries of the much-talked-of "Woman's sphere" have not, as yet been definitely fixed, but satisfactory evidence has already been given that the home is within its bounds. Even if this were the only position included within the sphere that woman can fill acceptably, she might well be proud of the place and honor accorded her.

To be the central figure, the presiding genius, the heart of the home, is to occupy a position of the greatest honor and power, to hold which is woman's highest privilege. None will attempt to gainsay that oft-repeated statement, "Everyone owes a duty to the home." In order to bring about that happy condition which makes the house in which we dwell, of all places the most delightful, it is necessary that each member of the home should share in this work of mutual interest, yet the fact remains the same, that the homemaking depends for the most part upon the housewife. Francis Power Cobbe says: "The making of a true home is our peculiar and inalienable right, a right which no man can take from us, for a man can no more make a home than a drone can make a hive. He may build a castle or a palace, but though he be as wise as Solomon and rich as Cræsus, he cannot turn it into a home." Since it belongs to woman to build that precious thing called home, since she has

Leen endowed with the faculties necessary to the discharge of the duties required, it should be her aim to use her privilege wisely and well, by endeavoring to secure for herself and household a place worthy the name made sacred by many endearing associations.

No home grows of itself into the earthly paradise sentimentalists dream of, but constant thought, persistent effort, and untiring devotion are the requirements necessary if a possession so rich becomes ours. An irksome task some one will say. Not so, but a pleasant duty. Between the pioneer's cabin, with its plain furnishings and rude appointments, and a modern house with appliances, and furnishings conducive to convenience and comfort, the contrast is marked; theirs the best at their command, ours the result of the united plans of generations of thoughtful men. Their simple pleasures around the great fireside gave them none the less joy than do ours in the midst of every comfort. The true housewife is the same, let the surroundings be what they may.

To the thoughtful, this one truth constantly presents itself, homes should be individual, each having a character of its own.

To attempt to reproduce under our own roof-tree an exact imitation of another's home, would be as great folly as for a housewife of to-day to do her work in a certain way, simply because it was her grandmother's plan. True, some of the characteristics of one may be introduced into another, much to the latter's advantage, but even in such a case these must be adapted to the individuals concerned. The rules and regulations suitable for one household may not apply to another. The homes we have in hand, to mold at will are to furnish more than physical comfort, to supply more than material wants; they are schools, not only for children, but parents, where character is developed and ennobled, and where mind and soul are broadened by daily contact with others. As the planets in a system balance and regulate each other by mutual attraction, so in the well adjusted home, by impulse unconsciously given, and by necessary checks imposed, the whole is kept in balance to the happiness and improvement of all concerned.

The ideal home makes prominent, but not obtrusively so, good housekeeping. Who does not know of a household where a particle of dust, a thread upon the carpet, a book out of place, or a chair at the wrong angle, will cause the scrupulously exact housewife great distress of mind; anything out of line with her idea of neatness is a matter of much more concern than the comfort of the family. It is true that neatness and order should prevail, but they should be subservient to greater needs. Nothing in the house is of so much importance as they who dwell therein, and the housewife who persists in keeping an immaculately clean and orderly house, at the expense of time and strength, leaving no time for self-improvement, is forgetful of the higher ends for which the home exists. It is also a well-known fact that memories of mother's pies and cakes are not always agreeable topics for conversation, when some recall them in after years in presence of their wives, especially if these have been made matters of paramount importance in the mother's home. How much better to be remembered as counsellor and companion than as cook. Nutritious and well prepared food is necessary to the comfort and well-being of every household, but this may be simply prepared and tastefully served, without the outlay of so much time as was once thought needful. The wise home maker would prefer to dispense with some of those rich pastries and puddings, and use the extra funds in supplying the household with good magazines, papers and books.

As regards house ornamentation, there is also a limit. Fashion is constantly throwing upon our hands something new in the way of house decoration, such as cushions, banners, throws, screens, paper flowers, balls, and what next no one knows. Now a certain amount of drapery and ornamentation is well and good in its place, but taste and reason—to say nothing of comfort—ask that a line be drawn somewhere.

Some one discovers that a piece of rich material falling in careless folds over an arm chair brings out its beauty and has a good effect. Very well so far—but straightway every chair, picture, and shelf is made to wear a drapery, no matter what the effect, and sometimes it must be confessed very much to the discomfort of the occupants of the room. All such profuse ornamentation greatly increases the care of the housewife, who knows full well that the careful dusting and rearranging must consume much time. We call that man foolish who allows himself to become so blindly absorbed in his business, that he leaves no time for rest; permitting the enjoyments of home life and its possibilities for growth to pass by unheeded. Is the woman any wiser, who does not make the effort to so simplify the problem of living and systematize its necessary work, that leisure may be found for rest, recreation, and development? The true home maker learns by experience that the home only reaches the best when love, peace, and sunshine fill it, when by practical lessons of unselfishness and forbearance the lives of its inmates are broadened and strengthened. The three essentials to good homemaking are within our reach to-day as never before.

Social life and culture, intellectual life and culture, and religious life and culture. The three are inseparable. As the home is preeminently for the child, we should bring to it everything within our power that will be helpful; everything that will nourish toward a vigorous growth the character that is forming. A steady aim to cultivate tastes pure and simple, to build a solid foundation of knowledge and good principles, will give to the world a generation of men and women, trained to reverence truth, uprightness and honor, a generation sound of body and mind, who will not spend an undue amount of time, care and labor, on the things that perish.

Our country wants, and the world wants good homes, upon these depends the future of nations, and the possibilities growing out of the future ought to "uplift and fill with divine power every woman, whose hand may touch and mould her own or other homes."

WHAT OF THE FUTURE.

By J. D. MERCER, ZANESVILLE, O.

[Read at Chandlersville Farmers' Institute, held Dec. 23 and 24, 1895.]

A review of the achievements of the nineteenth century, and especially the latter half of it, in which each year has contributed so much to the vast store-house of the inventive genius of the world, leads one to exclaim that time and distance have been almost obliterated.

It is within the memory of many of you when the tallow candle was the only method of illumination in our homes, and our fuel was derived from the forest. These were supplanted by coal—furnishing heat and power—and its gaseous product for light, followed by petroleum, with its various products and uses, this to be in turn displaced by that great, unknown and all-pervading power—electricity.

Meantime our methods of transportation and travel have been transformed from the trains of heavy six or eight-horse wagons, and the lumbering stage coach, to the immense trains of freight cars and the luxurious palace passenger coaches, gliding smoothly over their steel pathways, carrying our merchandise, or the traveler, from place to place at a rate of speed of from thirty to sixty miles per hour. During this same period, it has become commonplace to transmit your message by telegraph, and recently by telephone, almost to the ends of the earth in the

twinkling of an eye, and flashed thousands of miles under the waters of the ocean, which fifty years ago could only be carried by relays of postmen and on slow-sailing ocean vessels to foreign countries.

Not alone in this way is this subtle agent—electricity—being utilized, but in many others. As in illumination you have but to “touch the button” and instantly the brilliant light is flashing forth in every street and apartment in the city.

It has come to be the motive power for your street cars and suburban railroads, and is taking the place of your delivery wagons and even of pleasure carriages. To what use may it not be put in the next decade?

You have witnessed a similar development in the tools and processes of your own particular industry—agriculture. From the primitive, unwieldy and ill-shaped plow, has been evolved the modern, perfect-shaped implement, and this adapted to carry the operator—if he desires that pattern—at perhaps less expense of draft than was required by the former, or, under suitable conditions, operating a gang of plows and turning two, three or more furrows, and drawn by steam power.

From the timber or brush harrow has come our modern discs and pulverizers, to which are added attachments by which, under favorable conditions, the whole process of plowing, pulverizing and seeding may be done by the same implement.

The old-time sickle and scythe have been almost forgotten, since being replaced by the modern binder and mower, either of which goes into the field and under the direction and management of a smart boy, performs as much work and does it better, than formerly could be accomplished by a half dozen strong men.

And along with these come the wonderful developments in the processes of manufacture in all its lines. As instances, follow the mass of ore as it comes from the hill or mountain side, through its various annealing and tempering processes, until it is turned out as the heavy plate for the boiler, or for casing for the iron-clad man-of-war, or perhaps drawn into the delicate, spider-web fineness suitable for the hair spring of the finely-adjusted chronometer, or made into the almost infinitesimal screw (the most expensive product of steel) which enters into the construction of this same chronometer.

Think for a moment of the growth and present magnitude of the art of all arts, “the art preservative,” as it has been called. How but little more than fifty years ago the few hundred printing offices of this country laboriously ground out their editions of a few hundred copies each, of book or paper, on the hand press which required two or three men to operate it. Compare it with the lightning press of to-day, which turns out its thousand copies per hour and so accurately and perfectly done that it scarcely needs to be touched or watched while it does its work. Along with these marvelous improvements and inventions—the number and variety of which I have scarcely hinted at—come the changes in the commerce of the nation and the world. By means of our vast systems of railways traversing the country in every conceivable direction, the abundance of one section can at once be transported to the scene of destitution in another, and in our vast store-houses many of our food products can be stored and kept for an indefinite period of time. We are no longer subject to such fluctuations in values of the products of the farm as we remember in the past. As for example, the famine prices for hay and perhaps for potatoes, which a quarter of a century ago would have prevailed in this section, under conditions similar to those which now exist here, are met and repressed by the abundance of the North and West being poured on our markets. If the West should fail of some of her staples, the East or the South may have to spare.

With the vast refrigerator storage plants now in use in the great markets of the West, in which thousands of tons of beef and pork may be kept indefinitely, and which may be, and *are* filled with cheap stock in the fall, think you that the price of *our* cattle or hogs will be allowed to advance sufficiently from fall to spring to show any profit on the winter's feeding?

The situation which confronts us to-day is this, the cattle of the great West and Southwest are grown on the range or ranch—cheap lands—little or no taxes or improvements to keep up (some of these lands rented from the Indians at a few cents per acre), and are finished on the cheap grain of the West, then taken to the market and slaughtered and held, to send the dressed beef to our local market to sell at the time we must put our winter-fed stock on the market. The question is perhaps pertinent, "What are you to do about it?"

Thoughtful prudence and economy may possibly get you through with a few cattle to realize market value for your feed, but don't anticipate much *profit* from this source. The greater profit must come from retaining and using the rough feed on the farm—*through the manure bin*. Were it not for the ravages of disease among the hogs of the West, we in the hilly section of this state could never again afford to raise a hog for sale. True, hogs have been more profitable than any other farm stock for two or three years last past, and for reasons just assigned, *may* be so again. Raise none but the best and take pains to have them always ready for a buyer.

Will you try horses? Their use is being displaced by the electric motor, the bicycle, the tricycle or moto cycle, which in a short time may be developed into a full fledged pleasure carriage.

Science is even now harnessing the momentum of the mighty cataract of Niagara and other water-falls, and even of the ocean waves, to utilize this hitherto wasted energy in the production and transmission of *power*. It is estimated that the Falls of Niagara can be made to produce power through the dynamo equal to the capacity of all the steam engines in use in the State of New York.

Clear lake, a body of water seventy-five miles north of San Francisco and thirteen hundred feet above the sea level, from its outlet discharges three hundred and twenty-seven million gallons of water daily. This is to have its forces translated into electricity and sent on over-head copper wires, twenty thousand horse power or more, to the motors in San Francisco.

Thus are some of the uses of our horses being supplanted. Not only so, but like the beef and pork, horses are being produced in the West at much less cost value than here. Yet there are at least two classes of horses which will still be wanted, viz., the stylish coach or fancy driver, and the heavy, active draft horse. The farmer must keep and use the "plugs" if he grows such, for the markets show no demand or use for them.

What about sheep? Well they have their dual use and after all are the most profitable stock for the farmer, certainly so in the rolling or hilly country where it is unwise to plow too much. True, the shepherd was the first man struck by the cyclone, and all over the country flock owners hastened to get rid of their sheep. The decline in the value of wool and incidentally of sheep also, *may* have been caused *in part* by adverse tariff legislation; or, it may have been brought about by conditions similar to those which reduced the value of our wheat below cost of production last year.

But however that may be, in my judgment the climax of lowest prices is passed, and the future outlook is a little more hopeful. The use of shoddy is a very great factor in depressing the price of wool. I would not prohibit the manufacturer from using shoddy, but I would insist that he *sell it for what it is*.

The carcass of mutton if properly grown and advantageously marketed, costs no more and brings in the market nearly as much as your beef, and the product of wool may be counted as profit. My advice, therefore, would be, keep a few sheep of the breed that suits or pleases you best, breed and handle them intelligently, have them at all times ready for a buyer who may want them more than you do, and see if they do not show a better profit at the invoice than any other line of stock. It is, however, probably better that you should select some line or branch of pro-

duction of which can make something of a specialty, along with your general farming occupation. In the adoption of this plan you should select such a field for operation as best suits your *surroundings* and your taste or inclination. Let this be dairying, poultry raising, the growing of fruits—large or small—or what not, the same intelligent, painstaking care is demanded in the production, and even greater care in their sale. Put your product in the most attractive form, select and assort, and sell as much as possible, as Mr. Chamberlain advises and practices, in original packages and direct to the consumer, and demand and receive the best price for the best of your product. Dispose of the remainder to the best advantage practicable, and thus obtain the greatest return for your labor and investment.

We gather wisdom from the lessons of the past, therefore we should treasure and profit from our experience during the season of drouth and partial failure of crops, through which we are passing. Did you observe in your own or your neighbor's corn or potato field, how much the careful, thorough preparation, followed by the frequent stirring of the surface soil, promoted the growth and added to the final yield of the crop? The conclusion reached is, that by having the surface soil fine and porous, it gathers and retains moisture for the growing crop. How else than by frequent cultivation could we, in such a season, have grown such a crop of corn, and your observation will bear out the statement that those fields which were best tilled have uniformly yielded best?

Then the lessons of *economy* in the *use* of feed, especially such as hay and fodder, will be of great value for the future. Some who have been extravagant in the use of hay (as I have been) may learn how much (*or how little*) should constitute the daily ration; also to grow and use substitutes, such as millet, fodder, straw, or roots perhaps, and thus increase the productive capacity of our farms even in favorable seasons. Many of us are brought to consider as never before how to care for and economize in the use of the corn and fodder crop, i. e., whether or not to convert it into silage, or if ripened and husked, as is the general custom, how to best care for and use the fodder.

You will observe that I am trying to advocate prudent, business forethought and judicious economy as applied to the outdoor or practical part of the farmer's work, believing that only by such methods can his avocation be made more than sustaining in the future. Strictly *legitimate farming* (by which I mean to leave out all elements of speculation, such as dealing in horses or any other kind of stock or product of others' raising) has not been very profitable in the past, when much higher prices prevailed.

How much more difficult then, must we find it now, to save or accumulate anything when prices are so depressed on everything the farmer has to sell, while for many things for which his money must go, the outlay is no less, and for some even greater. In some instances these changes of value are discouragingly disproportionate, as for example in Wayne township, for the period from 1875 to 1885 the tax rate averaged about one dollar and five cents on the one hundred dollars. One bushel of wheat or three pounds of wool would more than pay the tax on one hundred dollars. Last year the tax rate was one dollar and forty-five cents, and it took about three bushels of wheat, or—well I don't like to make a mathematical calculation to find how many pounds of wool it took to pay it.

When is this depression to have an end? You must find the cause, to apply a remedy. As to grain production, that may be increased indefinitely in the great West and Southwest, at no enhanced cost, for many years, but the increased stock production will probably be at a somewhat increased cost, as it must receive more care and more grain.

As to whether it is possible, or even advisable to seek to control those great combinations of packers and others who manipulate and determine prices of our meats and many other products, I will not attempt to discuss, but it certainly is the part

of wise, conservative political economy, to demand suitable restraint on those corporations and combinations and occupations which derive their franchises, their existence and their incomes from the public and the public service.

Some of these have grown to be burdens. Many of them are the fruits of *selfish*, unpatriotic legislation, and might be corrected through organized demand, by the use of the great force or power of our republic—the *intelligent ballot*.

Thirty-five years ago you could count our millionaires on the fingers of one hand, now the fingers of one hand do not suffice to count them in thousands. We have been fostering and encouraging the aggregation of wealth in corporations, monopolies, trusts and syndicates by allowing them undue privileges and exonerating them from their just share of the burdens of government in the way of taxation.

Nothing else then, than the *patriotism*, the love of our country and its guarantee of equal rights to all (not blind love of party), *of the farmers* (no other class or occupation *will* or *can* do it), will save our republic from the fate that history shows us has overtaken all former efforts for republican government.

If, then, we would leave this goodly heritage unimpaired to our posterity, do not neglect the culture of the children, beyond comparison the best crop of the farm. They should be inspired at the home fireside to become intelligent, moral, industrious and useful men and women. Yes, and patriotic, loving their country and its free institutions, seeking the greatest good for the greatest number and equal privileges and rights to all.

Let us seek intelligence in the use of our *opportunities* as well as our *ballots*, for education is and must be the bulwark of a free government, and we should have it impressed upon our minds that we are no better off than before, if after having improved our farms and raised greater crops of wheat, potatoes or wool, we allow unwise or hurtful legislation to rob us of our legitimate returns.

But we have unlimited confidence in the genius and loyalty of the people of this country, and we confidently hope and believe that under Divine guidance the blessings of a fair degree of prosperity will ere long be granted to every legitimate productive industry.

OUR NEIGHBORS.

BY CHAS. H. PETERS, ST. PAUL, OHIO.

[Read at Ashville, Pickaway County, Farmers' Institute, held Jan. 13 and 14, 1896.]

From our business connections with men we have seen that it does not work to treat them as rivals or machines; but as a famous Roman emperor once said, "We are made for cooperation, like feet, like hands, like eye-lids."

On many sides of our lives we meet men in society simply as neighbors.

The old idea used to be that members of the same tribe, caste, or class were bound to help each other. Thus Roman should help Romans, and Brahmins should help the poorer Brahmins, and noblemen should stand by each other; but Romans need not help Greeks, nor nobles spend their money in aiding peasants. Jesus taught that every one is our neighbor, but this teaching has never been very much believed till lately.

It is now coming to be the creed of the world that we ought to treat all men, of every race and condition, as neighbors.

It is in the family that this neighborly feeling has its rise.

We very easily know how to treat our elders, our guests, our brothers and

sisters. We learn what our duties are towards the younger members of the family, towards the feeble, the sick, or the dependent.

Now the village is but a greater family, and the state a still greater one. In a large way all mankind make but one great family.

The same rules and the same good temper that show us what to do in the home show us also how to live together whenever and wherever we come in contact with men.

We have a right to respect and courtesy from others as befits men.

We have a right to be considered for what we are really worth.

This right holds good whatever may be the dress, or however humble the station we occupy.

As the poet Burns says, "A man's a man for a' that."

We have a right, too, to our privacy in the many personal matters which concern ourselves or our most intimate friends.

It is not well for us, nor desirable for others, that our private affairs be made subjects of gossip or publication.

Idle curiosity has no right to intrude upon matters which concern ourselves solely.

As "every man's house is his castle," so every man's private life, plans, thoughts and feelings, personal correspondence or conversation, ought to be sacred from publicity.

These humane rights do not come however from any power of compulsion like legal rights to our liberty or our property, for the maintenance of which we may ask the assistance of the government, but are the products of public discretion.

The law would be no safeguard to these rights, for respect unwillingly shown would not be sincere, and our private affairs would become public as soon as carried into court.

Pride of family or education has no claim to peculiar respect, as though we were finer clay than other men. We must expect others to take us, not at our own value, but at their estimate of us.

We have no right to anyone's intimacy or confidence.

Neither have we any right to insist upon being taken into another's employ.

We have no right to demand assistance from our neighbor.

If we have a right to live we have no right to force others to help us to live.

Our neighborly rights are only such as they will allow us, for neighborly feeling is destroyed when insisted upon.

We have, then, in most respects, to trust others to give us these rights. *Our* principal business is with our duties.

As we meet in business, elect men to office, or choose our associates, we have constantly to pass judgment for or against each other.

The risk is that we shall judge carelessly, that we shall make up our minds hastily or on worthless evidence, and thus do our neighbors an injustice. We owe it, therefore, to every man, mindful of the Golden Rule, to value him for what he is really worth.

It is policy to err on the side of overvaluing rather than undervaluing others.

We are in duty bound as neighbors to respect each other; by which we mean not only courteous behavior, but respectful feeling.

This is based upon the fact that every man has the same human qualities which we have.

By slighting or despising the common human nature we not only hurt others but cheapen ourselves.

Moreover, men show their noble qualities—courage, fairness, generosity—to those who treat them well—and expect *their* best in return. This is true even of the horse and the ox which serve the masters best who treat them the most kindly.

If this be true of the brute world how much truer should it be with the lords of all creation.

The true neighbor is sympathetic; he rejoices in the happiness of others and sorrows at their pains; he is glad to hear good and sorry to hear evil of them.

Sympathy seems easy by one's own fireside. The good of one is evidently the good of all; the hurt of one, the hurt of all.

The same is true, although not so evident, outside of our own friends or family.

The good of every American is the good of all; the loss or hurt of one is the same to the whole people. Just as when one small wheel of a great machine is injured—the mill does not turn out so much work.

We need forbearance that we may not condemn our neighbor till we know the circumstances against which he has to struggle.

He may be diseased, he may be misinformed, or for no fault of his own may be incapable.

We are bound therefore, to be patient with him, as we wish others at times to be patient with us.

Even when another does us an injury, we have no right, like an ignorant savage, to wish him evil.

Our neighborly duties are of different grades of importance.

Thus we are first naturally responsible for the care of our own family and relatives.

We owe more to our friends than to strangers, to those who are near than to the distant, to our workmen or employers than to others, to our townsmen than to another town, to our countrymen than to foreigners.

Closer bonds make greater obligations.

A better knowledge of their wants is brought about by our proximity to our neighbors and we can treat them more intelligently.

If a brother or a townsmen were in trouble, we should choose first to assist him. Whilst in the great flood that destroyed Johnstown, every one was glad to lend a helping hand, the first duty was upon the people of Pennsylvania.

Nearly every rule has its exceptions.

A stranger or a foreigner for example might for the time being need more attention than our immediate friends. In fact his character and services might be such that he would deserve more, as when we have a distinguished guest from abroad. While we owe kindly feeling to all, we do not owe everyone a place among our intimate friends. In fact one can not have very many intimate friends.

If all men were equal in intelligence, power, and goodness there would be no special difficulty in treating them as neighbors.

We see that there are all sorts of inequalities.

The actual difference between a savage and a statesman, poet or philosopher, is as great as was formerly thought to exist between a slave and an emperor.

The difference between men in moral character is equally great.

We cannot, therefore, truthfully treat all men in exactly the same way, or give all equal respect or sympathy, since there is much more to love and honor in some than in others.

How truly can we say of some neighbors in the language of James Whitcomb Riley's description of the old-fashioned roses,—“I like 'em, 'cause they kinder, sorter make a feller like 'em.”

Indeed, it would be very unfair if we treated idle, ignorant and vicious people with the same respect which we show to the industrious, intelligent, and virtuous.

The aim of men, as they live in society is happiness and the great rule benevolence.

We are not allotted time enough to enter upon a discussion of *all* the curious

varieties of neighbors nor the corresponding numerous methods of dealing with them.

The line would extend from the ever hopeful old maid with her curious notions to the superstitious old farmer who plants his potatoes in the moon and then prays to God for sunshine and rain to produce the crop.

The line would extend directly past the door of the girl who cries for a new hat for church-going and then laughs three-fourths of the time during service.

Right by the door of old Deacon Clodhopper who expects to balance his account with the Lord by donating a bushel of turnips every fall to his pastor.

By the door where economy and "hoggishness" are considered twins. Here charity comes in small lumps. We are reminded at this point of a shrewd little fellow who was intrusted to the care of his uncle, who fed the boy very poorly.

One day he happened to see a greyhound, whereupon he asked the boy if he knew what made the dog so poor, and the reply was, "I guess he lives with his uncle."

The stingiest man I ever heard of was the one who boiled down the tears shed at his wife's funeral to save the salt they contained.

Let us pass on by the door of wealth, where luxury and pomp and vain glory reign and pause for a brief moment at the more common portal where poverty dwells.

Not in derision, not in scorn do we pause, for truly may it be said that from the undiscovered fountains of these humble homes spring the noblest qualities of our great commonwealth.

They constitute the majority of our neighbors and consequently first require our consideration.

It may be the home of her whom God hath made the centre of pure and undefiled religion—the widow and the orphan.

It may be the threshold just passed by the ever-wandering angel of death.

It may be where hunger and cold—want and disease stand without—the howling wolves of misfortune.

In the face of such circumstances comes a key that unlocks in every heart the qualities of that word—*Neighbor*.

It is not the number of lamp-lights that bestar the dark horizon of the evening that numbers the true neighbors for a given home.

There is a test that goes higher than mere proximity of residence.

It is the spirit of action in the hour of adversity.

One of the greatest questions which society has to answer is: "How shall we best help the poor?"

For hundreds of years the plan of giving alms was tried until it was found to be only fostering the very evil against which it was struggling.

In some countries, like Italy, there came to be a large class of professional beggars, whilst England swarmed with paupers. Governmental support, either wholly or in part, seemed to take away all manliness, independence, and powers of self-support. Underneath the custom of alms-giving was the strange old notion that work was a curse.

In opposition to the old belief that the most desirable condition is a life of ease and idleness—we have found not over excessive labor to be favorable to health and happiness, and that even the struggle necessary to overcome difficulties often develops the noblest and the most successful men and women.

Therefore, I say the wisest and kindest charity is *to help the poor to help themselves*.

Thus it is charity to find a poor man work or to teach his wife the principles of economy.

It is charity to teach their children trades, or build up a new industry in a poor neighborhood.

It is charity when a town improves a bad street, renovates an unhealthy community, provides the means of education, establishes libraries, and lays out public parks, free for all.

Whatever tends to make citizens more healthy, capable and intelligent, will "help the poor to help themselves."

The modern motto is, "Not alms, but a friend."

The modern insurance, the postal savings banks of Great Britain, and the co-operative banks of Philadelphia are examples of the means for the multitudes of the poor placing something between themselves and want.

It is a neighborly spirit that lends such means of encouragement.

But there is a duty of helping the needy poor, which society owes partly to itself.

So far as the working of bad laws and customs has caused poverty, society ought to help pay the penalty of its own faults.

It would lessen the happiness of all and narrow the sympathies of men to witness suffering and do nothing towards relief.

Our common humanity especially requires us never to rest content while fellow men are in distress.

This quality of sympathy and humanity was the one noble thing about the old-fashioned alms-giving.

True charity aims to foster this sympathy and to direct it to the most permanent good.

It asks us, "to put ourselves in the other's place" and to act accordingly.

To these neighborly ends let us follow the bidding of conscience.

As the heart governs the circulation of the blood, so is conscience the organ of moral health and soundness.

Conscience also binds us, through just and friendly acts, the cordial, generous, and helpful relations with our fellow-men.

It will not let us hate, despise, or desert them.

As each man's conscience has free course, human society works together in health and happiness.

But disobedience to conscience represses sympathy, separates us from each other, and locks us up each one by himself, like criminals in their solitary cells.

When, therefore, any one's conscience is repressed, it is as if one of the little valves of a great engine failed to work.

This is not all.

Duty is one of the great forces of the universe.

It is stronger than any man, or the whole mass of men.

Whoever obeys, though alone, is sustained as if the universe were on his side.

For we know that whatever is right, or ought to be right, will come in the end; those who help it, will succeed; those who resist it will fail and be forgotten, for justice and right are the foundation of the world.

There are two kinds of conscience in men. One kind is like an engine built to draw a train on a level track.

It simply keeps one up to the duties which habit, custom, convenience, or expediency requires.

The man with this lower power of conscience asks at every question or crisis: "What will other men say or do?"

The higher kind of conscience is like the powerful engine which can lift its load up a steep grade. It does not go by convenience, but by the standard of right.

It does not ask what the custom is, but what it ought to be; not what others do, but what is right.

The men and women who have this kind of conscience are those who help make the nation, the state or the community strong; out of their list come our heroes, our reformers, our statesmen, *our neighbors*.

THE NEW WOMAN ON THE FARM.

By HARRIET LEMMON.

[Read at the Harrison County Farmers' Institute, held at Cadiz, Jan. 20 and 21, 1896.]

Do not for a moment entertain the idea, that from the subject we purpose portraying this "New woman on the farm" as going forth arrayed in bloomers to milk the butter-milk cow; such descriptions of women come only from the columns of papers, whose editors pass for would-be-funny men. We never find them in the cultured columns of the New York Tribune, Philadelphia Ledger, or the papers published in Harrison county. We are believers in the old saying, "there is nothing new under the sun." Therefore this woman of whom we shall speak is not new, her history dares backward to the world's creation and will reach forward to the brink of eternity. The patent of farm life was granted at the Garden of Eden ages and ages ago. All along through its rise and progress, woman has played no minor part in the life on the farm. Take her in our own country, from the landing of the Mayflower, when she first stepped on this native soil; whether in the cabin or helping to clear the forest to pioneer the way for the beautiful farms that dot the hills and adorn the valleys of happy, proud Americans, woman was always working. Let us trace the new woman all along through life. In babyhood she will be the pet of the household, not compelled to fall asleep in an old-fashioned cradle, rocked to the music of the churn; rather she will be hushed to slumber in the arms of her nurse from the strains of some sweet lullaby. In childhood you will catch her glee and prattle, as running along the banks of the brooklet, swinging her hat to and fro, chasing the butterfly, she knows not where. From seven to sixteen you will find her in the school-room, not the school of reading, writing and spelling, but the advanced common school of our nation. At sixteen you will find her pursuing her musical studies at the nearest village, she will not be obliged to miss a lesson now and then from that old excuse, "we cannot spare the horses," for she will have in her possession that innocent, graceful and profitable pleasure of girlhood—a wheel. Yes, at sixteen every thought will be of music, horses, cows, dogs and boys unknown, but perchance some morning should you linger at the gate as she mounts her wheel and rolls away you will catch the echo of her song—"a bicycle built for two." From seventeen to twenty you will find her in the college, not one here and another there, but every young woman from the farm will enter some college, for it is an acknowledged fact that fifty per cent. of the young women enrolled as students at the Ohio Wesleyan University are from the farm, or to bring you a little nearer home, about seventy-five per cent. of the young women enrolled at the Scio College are from the farm. You cannot doubt this statement, for I have given it to you just as the presidents of the colleges have given it to me, and while the only inquiry made was regarding what per cent. of the young women students were from the farm, it was noticeable that each reply had these words for the closing sentence: "The best students in our college to-day come to us directly from farm life."

Having completed the studies of college and received her diploma, she will return to the dear old farm, not to a life of idleness and ease, but a help to her mother-

and a sunshine to her home. Simply because these young women were born and raised on the farm, it does not imply they shall all cast their lot with farmers nor will it be said of them as of the city cousin—

"She fell in love with a fellow,
Who swells with a foreign air.
He married her for her money,
She married him for his hair."

Some will tarry here, others will go yonder, yes this new woman will not only enter every open door, but open others closed. Let us stay for a time with the one who has chosen to be a farmer's wife. The happy days of courtship are not spent in stirring apple butter, the wedding day has come and gone and the new woman is ushered to the new home.

How changed from the farm of forty years ago. Enter her parlor and behold her carpet, furniture and piano; enter her reading-room and on the shelves of the library case you will find the works of Sir Edwin Arnold, General Lew Wallace, histories ancient and modern, to say nothing of the selection of poems from her favorite poets, books that have been collected by this young woman thus far through life. Contrast it to the library of the old home, of which the principal book was Dr. Gunn's Medical Work. Enter her kitchen, every modern convenience; gas has taken the place of wood and coal, and instead of the new woman being obliged to go down and down the hill in search of water, water is brought up and up the hill in search of the new woman. But before you leave we must not forget the "spare bed-room"; in it the modern spring mattress has taken the place of the forty-pound feather tick, because the new woman has ceased to pick the geese. We will not linger to narrate every event of this home, but introduce to you a caller and you can guess the rest. A woman enters, upon whom this house has conferred the title of "Grandmamma." As she beholds her daughter—the new woman—in the zenith of her domestic affairs, she wishes to say something encouraging. Smiling, she exclaims: "The hand that rocks the cradle moves the world." The new woman simply smiles assent, knowing full well, "The hand that rocks the cradle moves the world," just as long as the world stays in the cradle.

The new woman will never husk the corn, she will never follow the plow; the milk from the cows of this farm will be taken to the creamery of the neighborhood and exchanged for butter, the eggs, poultry and other farm produce will be shipped to markets and the proceeds from the sale of the same will be deposited with one of the best friends the new woman on the farm will ever know, namely, a National Bank, and when she is desirous of purchasing her merchandise, she will be able to write her own check in payment for the same. How changed the scene from the time when the good farmer husband started off to the nearest market with all the produce, having purchased every article, the name of which was written on a slip of paper by the dear housewife, then the axle grease, not forgetting his own tobacco, he finds there is just enough of a balance to procure for her nine yards of calico, when he knows full well it requires eleven yards to make her dress, returning home he unwraps every package and as he unfolds the new dress, he exclaims: "See wife, what beautiful calico dress I have 'bought' for you," forgetting she churned the butter, she gathered the eggs, she set the hens, or perhaps this good housewife plighted her troth at the marriage altar in the days when the word "obey" was in the ceremony, therefore she nods assent, consoling herself with the thought: "Perhaps I can get a dress from the nine yards, by cutting it a little short."

Since creameries have taken the place of the home churn, produce is shipped to city markets and the new woman is capable of taking care of her own bank account.

The question may arise, will the new woman on the farm be able to manage a farm in all its departments?

In Dutchess county, New York, there lived a farmer who had in his possession three hundred acres of land valued at twelve thousand dollars. A division of the same was made, giving one-half to an only son and dividing the other half equally between two daughters, one of whom was an invalid. The son desiring to remove to another state, sold his share in the farm to the sisters for five thousand dollars, every dollar of which they were obliged to borrow, adding to it an additional four thousand dollars which they used for improvement, thus sleeping every night under a nine thousand dollar mortgage. Only a few years have elapsed since that event transpired, yet I can tell you, that farm is free from the debt of a single dollar, and should you ever visit Dutchess county you will behold one of the most beautiful farms in the State of New York. That farm was owned and operated by a woman of the past, what shall we expect of the new woman? She will not only pay the mortgage on the home farm, but hold the mortgage on the neighbor's farm. Another will ask, will the new woman on the farm enter politics? Not wishing to pass as a prophetess, I can only say, should the presidential bee ever assume a form, that it can be attracted by a magnet and then preserved for a future adornment, you need not be surprised if some day you hear of the new woman on the farm having the presidential bee ON her bonnet. Still another may ask the question: Will the new woman on the farm enter the industry of wool-growing? As long as we enjoy the benefits of the Wilson Bill and the farmer is paid the magnificent price of fifteen cents per pound for his wool, the new woman will be willing to leave the industry of wool-growing to the old man. Again it may be asked: Will the new woman on the farm be a leader of society? Farm life is not adapted to the so-called society of to-day. She may never grace the circle of McAllister's Four Hundred, not but that she could meet the requirements of tracing her ancestry and being able to write her check for a certain sum, but having shown she can adorn social life in days gone by, why should the new woman not shine brighter still? Of all the women who have graced our White House, the one standing pre-eminently in the lead as to intellectuality, education and strength of mind, she, herself an advanced teacher, went directly from a farm to the executive mansion, and best of all, she went from an Ohio farm, known everywhere as Lucretia, the wife of the lamented Garfield. In this age of progress when the hand of social reform is resistless the new woman on the farm will become a leader yet unheard of. While living under a government that grants no titles, she will be higher than a queen though she be uncrowned; statelier than a duchess though she be not arrayed in jewels; grander than a princess though she be unattended by courtly honor; higher and nobler than any title that has ever been given to woman in any age or clime will be given to her when all mankind are compelled to say, she is a womanly woman.

The new woman on the farm will know the law, as it pertains to the farm and farm life. You may call her a Portia if you choose. She will know exactly who pays the taxes on the mortgage and clamor for a better law pertaining to the same. She will know exactly what her rights are under the homestead law and clamor for more. She will give equal pay for equal work. To the man laboring in the field she will not pay one dollar per day, while to the woman laboring in her house she pays one-quarter of a dollar per day, but should each work from sun to sun they will be paid accordingly, because this new woman will be receiving exactly the same prices in the market for the grain and produce that her brother farmer receives; since there are no sex prejudices in the natural forces of the universe, the earth yields her increase just the same to woman as to man.

The happiest event in all this story is to tell you the new woman on the farm will be an American woman. She may never be able to describe the many flags that have been trailed by other nations as they contested for liberty, but as she

gathers her little ones around her knee she will be able to tell to them the story of the American flag under which we have liberty. She may never give in every detail the facts that go to make up the beautiful story of Florence Nightingale, commissioned under the Red Cross, taking help to the suffering soldiers on the battlefields of Crimea, but as she looks into the face of her manly boy, who may some day wear the epaulet of a soldier, she can tell to him everything regarding our own matchless Clara Barton, who, under the same commission, went to the battlefields of our country and ministered to the wants of our soldiers. She may never weary her brain trying to compute the value of the jewels that make up the crown that is worn by Victoria, Queen of England, knowing full well that crown can never rest upon her head, she will study the value of the jewels of womanly virtue, grace and ease, because the new woman on the farm has just exactly the same chance that every other woman in this land has of one day being mistress of the White House. Her home will be an American home. She will not expect to have as her guests duke or duchess, count, or countess, therefore she will be contented to spread her table with American linen, covered over with American china, filled with American food. She may some day have as her guest an American citizen, the President of the United States. Presiding at that table, she will never say, "Your Highness, may I serve you with the Saratoga chips," but with American grace she will say, "Mr. President, may I help you to the potatoes?" We can truly say of her as Major McKinley says of his political party, she will be for "America for Americans, America against the world." We found this new woman in the cradle, we have traced her all along through life, now in old age, when each wrinkle is a line of beauty and every gray hair is a streak of the dawning of eternity's morn we will leave her at the brink. She has proved—

"That women will not idly rest, a mere household dove,
When fit to be the eagle's mate and clear the clouds above,
But strive with him in noblest work and nobly win at last
When all the struggles, all the toils and weariness are past."

Last but not least we shall give to her the noblest of all virtues. The new woman on the farm, will be what most of her predecessors have been, a Christian woman. Her charity will be as broad as her domain. Clad in the mantle of Christian love she will go forth ministering to the wants of the suffering humanity of the neighborhood: returning homeward she will render up her gratitude unto the One who hath watched and kept. Her standing for the measurement of morality will be one and the same for man as for woman. Standing at the threshold of her own home, she will fling out the banner of social purity, having on it the words, "A white life for two." To this woman life will not be all sunshine, for while she holdeth in her right hand the cup of joy, she will hold in the left hand the cup of sorrow, out of which she will the oftenest drink and which will be the nearer to being full, will be to her an insolvable enigma, but in all things and at all times, leaving it with the One who is too wise to err, and too good to be unkind. The New Woman on the Farm

"Will go on not knowing,
Her trust in God reposed,
While every hour in perfect peace
She'll say, He knows, He knows."

PUSS IN THE CORNER.

BY MISS MARGUERITE B. MEGUIRE, MULBERRY, O.

[Read at the Farmers' Independent Institute, held at Mulberry, Clermont County,
February 21 and 22, 1896.]

"Pussy wants a corner!" Think of it a moment and what a host of recollections comes rushing, crushing, crowding through your brain. Once more you are a child, dashing from the school-house door at the tap of the bell, and scrambling for a place in that old game, for, unless you get a corner, you are "it."

"Pussy wants a corner!" How the blood flows faster and faster through your veins and your whole being seems strengthened by the thought of the childish pastime.

But how long ago it seems! What a great lapse of busy years separates you from those halcyon days when all the earth was new, beautiful, wonderful! When the heaven above you was almost within reach, and fairy land lay just beneath your feet.

What would you not give if you could only recall one last, flickering gleam from the ashes of the childish peace and innocence of those days. However, you have little time to spend regretting the irrevocable past with its buried hopes and aspirations. Look, rather, at the present, brilliant with new possibilities and opportunities.

Even while you are indulging in this retrospection you are playing Puss in the Corner, with the happiness of your life depending upon your moves.

You know Shakespeare compares this world to a stage, upon which each of us plays a part.

To-night we will call the earth a vast play-ground and life a great game of Puss in the Corner.

Here lies the political corner, there the journalistic, over yonder is the educational one, and so on until your brain reels and you grow dizzy as you behold the innumerable corners and comprehend the magnitude of the game. You occupy an agricultural corner. Snug and independent, with just enough of this world's goods to bring contentment without any of the cares of wealth. Ah, yours is an ideal position, indeed!

But what has become of him who used to share your boyish joys and sorrows, your desk and jackknife?

"Why," you say, "he occupies the next corner, a commercial one, and right well has he done, too." Well, even in childhood he was habitually trading off his possessions and making bargains. It is evident he has chosen the right corner.

Then there was the boy with whom you used to have a little altercation about once a month.

Where is he? "Oh, he isn't doing much of anything now. He tried this and that, and failed, so now he just does a very little of everything." Ah, I see! He is "it"! Wandering back and forth seeking a corner, everywhere receiving the same answer: "There's no room in this corner." "We do not need any more mechanics." "There are already too many lawyers." "Go to the next neighbor."

This being "it" is a serious matter. It means being homeless, friendless, almost hopeless. It is hard, after once getting out of a corner, to get back into one.

But let us study this game from its beginning. There is none of us would wander through life without some object, without endeavoring to achieve something, though it be nothing more than personal happiness; and, as labor is the price set upon everything worth having, we must labor to accomplish anything.

"No man is born into the world whose work
Is not born with him;
There is always work,
And tools to work withal,
For those who will."

So, according to the old proverb, "We must find something for ourselves to do, or satan will find it for us."

With most persons there is an instinctive tendency for certain pursuits, and that tendency should make the decision of a life time.

The youthful Napoleon's passion for playing soldier, the young Washington's similar inclination, Milton's studious boyhood, and James Watts' childish experiments, all demonstrated that the child is father to the man, and the childish inclinations are but foreshadowings of the man's passions.

However, not every one of us has the opportunity to follow the tendency of his own heart. A very strong nature will sooner or later overcome any obstacle and find its own sphere just as water seeks its level, or as the needle is drawn to the magnet. But many are they who, repressed by circumstances, relinquish all hope of becoming eminent in one profession, to become bread winners in another. Oh, there are hundreds of village Hampdens, scores of mute, inglorious Miltons, numbers of unfamed Cromwells—

"Whose hands the rods of empires might have swayed,
Or waked to ecstasy the living lyre."

You, from more favored corners may sneer at the humble position of these, but stop and consider. These undeveloped heroes have, at least, the satisfaction of having done all within their ability. Have you? With all your advantages you cannot have accomplished more than Sir Isaac Newton, and he compared himself to "a boy playing along the seashore, diverting himself in now and then finding a smoother pebble or prettier shell than ordinary whilst the great ocean of truth lay undiscovered before him."

If Abraham Lincoln would split rails and Samuel Johnson bear the pangs of hunger; if Homer and Erasmus would beg and Torrence perform the duties of a slave; if He, whose name worshipping millions have placed above all other names, had not where to lay His head, who can sneer at any position in life where there is honesty and integrity? We should let duty, not ambition, govern our opinion and our actions.

Judge for yourself which is worthier of respect, he who sacrifices his dearest ambition to some duty or principle, or he who, like Napoleon, forgets every principle in the selfish pursuit of that will-o'-the-wisp—ambition?

I believe that one saying, "I would rather be right than president," has won Henry Clay more genuine, heart-felt admiration than any service he ever gave his country.

Think of the noble, unselfish lives of Florence Nightingale and Clara Barton. Who would not rather go into history as such than to be remembered as a Cleopatra or Catherine de Medici? Who would not prefer oblivion to a fame won by questionable means?

Horace Greeley says: "Every child should be trained in some productive industry, not that he shall certainly follow it, but that he may do so in case he fail in the more artificial or intellectual calling he may prefer to it."

This brings up a new phase of the game. "Changing corners," we used to call it. The old rule, "Don't leave one corner till you're sure of the next," is as good in

one case as in another. If you are in any degree successful in one occupation, hold it until you are sure of the next.

Let not ambition lead you from a humble position to one which you have neither the ability to reach by fair means, nor the talents to hold after you obtain it. Better be a good hodcarrier than a bad poet.

After his return from the battle of Leuctra, Epaminondas was elected public scavenger by his enemies. To their surprise he accepted the office with the remark: "The place does not confer dignity on the man, but the man on the place."

After all, it is not how great the work that should be considered, but how well done.

In the parable of the talents, only he who did nothing was punished. He who doubled two talents received the same reward as he who doubled five. Each had done his best and—

"He who does the best his circumstance allows,
Does well, acts nobly,
Angels could no more."
So, "Let us be content in work,
To do the thing we can; and not presume
To fret because it's little."

Then if, by chance, you have become "it" in the game, do not despair. That would be like the boy who used to play until he became "it," and then say he was tired and didn't want to play.

From every corner you will receive the same discouraging, "Go to the next neighbor," but *don't go*. Choose a calling and make yourself a master hand in it. You will find that there is room for good workmen, for earnest men or women, in any vocation.

"The world *wants* men; light-hearted, manly men.
Men who shall join its chorus and prolong
The song of labor and the psalm of love."

There are thousands of vocations from which to choose. Surely you can find one to suit you. If not, perhaps you can create a new corner, make a new occupation. You may be able to do something never dreamed of by any one else.

Do not wait, Micawber-like, for something to turn up, but make it evident that "Barkis is willin'." Possessing the will to succeed, you will soon find the way, and agree with Franklin that "God helps them who help themselves."

Then there are those who, on account of some physical disability, are unable to take an active part in the game. For these did Milton write those beautiful lines—

"God doth not need
Either man's work or his own gift; who best
Bear his mild yoke, they serve Him best; His state
Is kingly; thousands at His bidding speed
And post o'er land and ocean without rest,
They also serve who only stand and wait."

Even the weakest has an opportunity to brighten a corner for someone active in life's struggle. Who, on reading John Hallifax, has not been impressed by the way in which blind Muriel's gentle disposition influenced all about her? Yet there is nothing more than *self* to prevent any one of us having the same influence.

Why not drop the old, petulant query, "What have I to live for?" and take up a nobler song:

"I live for those who love me,
For those who know me true,
For the heaven that smiles above me,
And awaits my spirit, too."

Why, there are innumerable things for which to live:

"For the cause that needs assistance,
For the wrong that needs resistance,
For the future in the distance
And the good that I can do."

After all, this game—fraught with such momentous consequences to us— is, to others, scarcely more important than the old childish pastime. We play our parts and pass from the scene of action.

The circle of those who remember and appreciate the manner in which we played, grows smaller and smaller until at last it includes but One—the Author and Furnisher of our being—who regards neither the power nor pomp of our positions, but Who, considering our ability, shall judge the manner in which life's work has been performed by you, in your little corner, and by me, in mine.

POCO A' POCO.

BY HARRIET F. G. PHELLE, BLOOMINGTON, O.

[Read at the Clinton County Farmers' Institute, held at Wilmington, Feb. 12 and 13, 1896.]

I have taken for the foundation of this talk a quotation from Kingsley:

"The secret of thrift is knowledge; knowledge of domestic economy saves income; knowledge of sanitary laws saves health and life."

It is plain to see that prosperity and profit must be the result of knowledge wherever found. The prosperous business man has a thorough knowledge of his business.

The thrifty farmer understands the principles of farming and how to apply them, the careful housekeeper, the best methods of house work, and the secret of all this thrift is knowledge, often times knowledge gained little by little in years of experience.

Our nation has grown in civilization and wealth through a better knowledge of civilized life and duties.

Mark the great improvement in the condition and surroundings of the agricultural class. To-day they partake of a greater variety of food from a more nicely furnished table, they reside in more convenient dwellings, wear better clothes, ride behind finer horses, in handsomer vehicles, and market a better quality of grain and live stock than their fore-fathers did.

What will another century bring us? The thought makes us eager to go on and grasp every advantage held out to us. Let us consider for a few moments the advantages these Farmers' Institutes have been to the agricultural class.

Every state and almost every territory has its experiment station, where much thorough investigation and research go on, and the results are published for the benefit of the farmer. The professors in the agricultural colleges, the

directors and staffs of workers at the experiment stations, and other intelligent men interested in this line of work are employed by the Department of Agriculture to lecture throughout the state at the Farmers' Institutes.

Aiming to give all farmers who care to know them, the latest and best methods in agriculture, horticulture and kindred subjects, thus assisting them to be more thrifty by possessing more knowledge.

By the last of this month there will have been held in this Buckeye state one hundred and fifty-seven Farmers' Institutes.

There are thirty-five lecturers employed by the State Board of Agriculture.

These intelligent men, for they every one are men, have two hundred and ninety-eight lectures from which the Institute Committees select what they think will most interest and instruct the people. Out of this number you will find fifteen lectures that are especially intended for the farmer boy or girl. Six out of the two hundred and ninety-eight pertain to the farmer's home. We infer that they touch on some parts of the work of the farmer's wife hence suppose the sisters wish to know the theme of these. They are as follows:

"Wash Day in the Farmer's Home," Seth H. Ellis.

"What Shall We Eat," Chas. E. Thorne.

"The Why of Methods of Fruit Canning and Food Preservation," Augustine D. Selby.

"House Conveniences," S. H. Hurst.

"The Farmer's Dwelling," John L. Shawver.

"The Farmer's Home," E. C. Ellis.

It goes without saying that the farmer's wife is interested in any thing that will benefit her or interest the boys and girls. I believe that every true intelligent farmer's wife would be more or less interested in the other two hundred and seventy-seven able lectures, for she is looking after all phases of farm work.

What is of value to her husband, claims her attention too, for they are partners. Yes equal partners whether so recognized or not.

Now, being an equal partner in this agricultural business, don't you think it unfair for so little attention to be paid to her especial part of the work?

We are in just as great need of better methods in our housekeeping as our husbands are for the work out of doors.

"Knowledge of domestic economy saves income." We want to make the hard earned income of the farm go just as far as possible with the best results. "Many people think that economy means a wholesale doing without things, but it does not; it only means a sparing to spend where we do. It means, also without littleness or niggardliness, a general watchful outlook that we get our money's worth." In the institutes of the coming year let some intelligent person of wide experience be ready to give a lecture on "Some Wastes in the Farmer's Dwelling."

I suspect one topic in such a lecture would be the waste of time and energy in methods of accomplishing housework. We want to hear the arguments pro and con for making rag carpets and quilts. We have heard that it is poor economy of time and material to tear and sew rags for carpet. In fact all things considered it is an expensive kind of carpet.

Then we have been told that it is real thrift to use the rags in a carpet, that people are getting too lazy to sew carpet rags and too proud to have it in their homes.

I find a number of lecture themes given in the bulletin of the Farmers' Institutes that I would like to change the wording of a little and then hear them discussed.

For instance let "The Farmers Need of an Education" read "The Need of Education for the Farmer's wife." There are three lectures relative to feeding stock. Let us have the benefit of one on "The Relative Values of Food for Man." For surely the farmer should know as much about food for his family as for his stock. Then let us have one on "The Principles of Cooking."

J. Fremont Hickman has a lecture on "A Few Mistakes we Farmers Make;" change one word and how suggestive this sounds: "A Few Mistakes we House-keepers Make." With what enthusiasm the farmers discuss "A Model Barn and How to Use it." "A Model Kitchen and How to Use it" might provoke as profound arguments as the tariff.

The last part of my quotation is "knowledge of sanitary laws saves health and life." While we believe that we have improved our manner of living above that of our fore-fathers yet we do not seem to be as robust a people. Why is it? The ventilation of our houses is different from that of the log cabin. May we have gone to the other extreme with our stove heated houses and windows darkened with many curtains and shutters? How many know that the original meaning of window is wind-door or a door for the wind? Some physician has said that many times the cause of children's having no appetite for breakfast is the utter lack of pure air in the sleeping room.

"Good health," says Mary A. Livermore, "is a great pre-requisite of successful or happy living. Very much of the peevishness and impatience seen in men and women has its root in bodily illness. The very morals suffer from the diseases of the body. Correct living and intelligent physical training will eliminate many of the tendencies to ill health which we bring into the world with us." Here is a suggestive story on this topic.

"Doctor," said a patient, "I believe there is something wrong with my stomach." "Not a bit of it" replied the doctor promptly. "God made your stomach, and He knows how to make them. There's something wrong with the stuff you put into it, may be, and something wrong in the way you stuff it in and stamp it down, but your stomach is all right."

It is a matter of congratulation that the United States Department of Agriculture has seen fit to make an appropriation for the study of food and dietaries.

Prof. W. O. Atwater a leading investigator in this line has said: "The large majority of families in this country are said to have not over five hundred dollars a year to live upon."

On the average more than half of this goes and must go for food. The cost of preparing food for the table, rent, clothing and all other expenses must be provided from the remainder. These statements apply less accurately to farmers than to the inhabitants of the larger towns, but, although the farmer produces much of his food, yet, taking everything into account, the expense for nutriment is large even for him. Although the cost of food makes so large a part of the whole cost of living, and although the health and strength of all are so intimately connected with and dependent upon their diet, yet even the most intelligent people know less of the actual uses and values of their food for fulfilling its purposes than of almost any other of the necessities of life. It is easy to tell whether a coat is worth its cost; for the eye judges its appearance and experience tells us how the cloth will wear. But we know almost nothing as to the actual nutriment in different kinds of food or as to the combinations which are best fitted for the nourishment of the body, and perhaps still less as to the ratio between value and cost.

The same professor says: "The cheapest food is that which supplies the most nutriment for the least money. The most economical food is that which is the cheapest and at the same time best adapted to the wants of the eater. The maxim that 'the best is the cheapest' does not apply to food. The best food in the sense of that which is the finest in appearance and flavor which is sold at the highest price is not generally the cheapest, nor is it always the most healthful or economical. Yet very many people seem to think that they must have this sort of food and that to economize by using anything inferior in quality or cheaper in price would be a sacrifice of both dignity and principle."

The nutrients of food are commonly divided into four classes, viz., protein,

fats, carbohydrates and mineral matters. The first is to form bone and tissue. The fats, sweets and starchy foods furnish fuel for the human body. Those who study this matter believe that through ignorance our food does not contain the proper proportion of these nutrients.

We consume relatively too much of the fuel ingredients of food, such as the fats of meat, and butter, sugar and sweetmeats, and starch, which makes up the larger part of the nutritive material of flour and potatoes. Conversely we have relatively too little of the protein or flesh-forming substances, like the lean of meat and fish, and the gluten of wheat, which makes muscle and sinew, and which are the basis of blood, bone and brain.

Chas. E. Thorne believes that the increase of nervous types of diseases is caused by the lack of phosphoric acid in the universal constituents of human nutrition. It has been proved that this is a prominent and constant characteristic of nervous tissue and is found in every cell of every organized being, plant or animal.

Ground bone fertilizer contains twenty to twenty-five per cent. of phosphoric acid. In our refined milling processes a large portion of this constituent is taken out of the grain in the bran. So much in fact that bran may be used as a fertilizer in competition with Carolina rock.

It is said that physicians are making large use of phosphates in medicine.

People blessed with excellent digestion escape ill results from this lack, but those who have impaired digestion and the young who are growing rapidly, and thus need a large supply of bone food, are liable to suffer. Would it not be wiser to see that this is supplied in our food rather than depend on the doctors for the supply.

"There is many times too little variety in the home bill of fare. Biscuits, bread, and different kinds of cake may constitute variations, but to be well nourished we must have different *kinds* of food. These are really all one kind or rather part of a kind, and the least nutritious at that all being made of white flour. Nature provides wheat, corn, oats, rye, rice, barley and buckwheat—seven grains—and we try to subsist upon half of one of them. There are vegetables innumerable, and yet potatoes are the only ones frequently used in many families."

Says the Health Calendar: "Different people require different kind of nourishment. Thus it has been said the intelligent mother knows that one child may demand flesh foods, and another bone producing material, and another stimulating edibles, and nothing is more cruel than to compel a child to eat that which is distasteful."

In this day when physiology and physical culture are being taught in our schools, do not the times require an annex to our experiment station where domestic economy and sanitary laws shall be studied from a scientific and practical standpoint? They should not only investigate the true economy of foods, but the best methods of cooking the same so as to perfectly nourish our bodies.

The kitchen has been compared to the family laboratory, the cook being the chemist. "The brain and the brawn of the world depend on her to provide the needful material for strength and growth."

Surely we need an experiment kitchen where capable, conscientious persons shall study for better, wiser methods of sustaining health and life, and the results be published for the benefit of the housekeepers of this commonwealth.

As not near all homes are farmers' homes, the benefits of such knowledge would reach a much larger class than that of agriculture. Are not all intelligent people ready to ask that this plan shall be adopted in this state, and eagerly await the knowledge to be thus gained? For "the secret of thrift is knowledge, knowledge of domestic economy saves income; knowledge of sanitary laws saves health and life."

OHIO STATE UNIVERSITY.—THE COLLEGE OF AGRICULTURE.

THE FREE SCHOLARSHIPS.

While probably no institution of learning has yet reached Ezra Cornell's definition* of what a University should be, the Ohio State University is planned on very broad lines as shown by the fact that it is divided into the following six colleges: Agriculture; Arts, Philosophy and Science; Engineering; Law; Pharmacy; and Veterinary Medicine.

The aim of the University is to give to the young men and young women of Ohio the largest possible opportunity for both general and special training to prepare them for life and to touch, in a practical and helpful way, every interest of this State. The University has seventy-seven instructors, thirty-three departments of study, nine large buildings devoted to instruction and about one thousand students. The lands, buildings and equipment are estimated to be worth two million dollars.

It is the purpose of this article to call the attention of the officers of the County Agricultural Societies to the College of Agriculture and to the fact that it is their duty to make the appointment of applicants for the free scholarship which is granted by the Board of Trustees of the Ohio State University to one student annually in the short course in agriculture. The College of Agriculture offers the following courses:

I. THE FOUR YEAR COURSES.

There are two full collegiate courses. One is in Agriculture and the other is in Horticulture and Forestry. While these courses give a thorough technical training in agriculture, animal industry, dairying, horticulture and forestry, as well as in the sciences underlying these arts, they afford an education and training fully as broad and liberal as that given by the other four year courses of the University. The scope of these courses is shown by the fact that instruction is given therein by the following departments: agriculture, agricultural chemistry, botany, civil engineering, drawing, English and rhetoric, French, geology, German, history, horticulture, mathematics, military science and tactics, physics, physiology, shop-work, veterinary medicine, zoology, and entomology. These courses lead to the degree of Bachelor of Science in Agriculture or in Horticulture and Forestry.

II. TWO YEAR COURSE.

This course, known as the short course in agriculture, contains as thorough instruction in agriculture, animal industry, dairying, horticulture, forestry, veterinary medicine, economic entomology, and the sciences underlying these subjects, as the time will admit. It is a thoroughly practical and popular course. About one-half of the students of the College of Agriculture are enrolled therein. Candidates are admitted to this course who present satisfactory evidence of preparation in grammar, geography, arithmetic and United States history. When candidates are over twenty-one years of age, preparation in these branches is assumed.

The first year of the short course is preparatory to the first year of either of the four year-courses. At the end of the first year of the short course, the student has three strings to his bow. He may complete the short course by taking the second year of the course or he may become freshman in either of the full four-

* "I would found an institution where any person can find instruction in any study."—*Ezra Cornell.*

year courses. It is in this short course in agriculture that the Board of Trustees offer a free scholarship, annually, to one student of each county of the state of Ohio. As this scholarship is good for two years, there may be two students from each county each year.

III. SPECIAL COURSE IN DAIRYING.

The special course in dairying is established to meet the wants of those who have neither the time nor means for the more extended courses given above. It is designed especially for those who are desirous of mastering the art of butter and cheese making or who wish to become fitted for the position of manager or superintendent of a creamery or cheese factory.

FREE SCHOLARSHIP.

A free scholarship good for the two-year course in agriculture or for the first year of that course and the freshman year of either the four years course in agriculture or in horticulture and forestry, is granted to one student, annually, from each county in Ohio. Each scholarship is valid for two years from its date and covers all college dues (namely: incidental and laboratory fees). If in any county there is no applicant for the scholarship in agriculture, a free scholarship good for the first two years of the course in veterinary medicine may be granted.

The appointments to these scholarships are made by the County Agricultural Societies and are not transferable by the appointees. To learn whether the scholarship of a given county has been granted, inquiry should be addressed to the Secretary or President of the society of that county. In counties where no agricultural society exists, the scholarship may be granted by the officers of the Farmers' Institutes.

Further information concerning the University or the College of Agriculture may be obtained by addressing the President of the University or the Secretary of the College of Agriculture, Columbus, Ohio.

PROCEEDINGS OF THE ANNUAL CENTRAL FARMERS' INSTITUTE

HELD IN

Columbus, Ohio, January 14th and 15th, 1896.

SESSIONS OPENED IN CITY HALL BUILDING AND CONTINUED AT
OHIO STATE UNIVERSITY.

The annual Central Farmers' Institute was called to order promptly by President Alva Agee, of Cheshire, Ohio, at ten o'clock, Tuesday, January 14, 1896, in the City Hall, Columbus, Ohio, with a large attendance at the opening session.

Prayer was offered by Mr. A. W. Livingston, after which the President of the Institute read the following:

ADDRESS OF PRESIDENT ALVA AGEE.

Gentlemen of the Farmers' and Breeders' Institute:

The custom of meeting once a year in this city for counsel is a pleasant and profitable one to many Ohio farmers. To the thousands who have never attended one of our annual meetings, I would say that they miss a grand opportunity of obtaining inspiration for better work, and an opportunity of making acquaintance that is worth much socially and may have a financial value, especially to the breeders. We meet, gentlemen, to discuss questions of importance to us as farmers, and if we reach correct conclusions in our deliberations, and in any small way increase our ability to prosper, every class of citizens is benefitted thereby in a very direct manner.

The farmers make the wheels "go round". When a boy I imagined that this claim was based upon nothing more substantial than a Fourth of July oration. Many manufacturers, merchants, city laborers and professional men have made the same serious mistake in their thinking. Within the past few years, however, we have had a forceful demonstration of the truth that in these United States the welfare of the masses is dependant upon the prosperity of the farmer. When the element of profit is eliminated from agricultural work; when in the production of food in this great agricultural country there is only the swapping of dollars, and no money remains from the proceeds of a crop after the cost of production is deducted; when the farmer's pocket-book is empty: then the local merchant finds that the goods on his shelves and in his warerooms do not move as they should.

In turn the jobber and manufacturer find that there exists a condition of things which they call "over-production". The supply is greater than the demand. A decline in the profits from agriculture causes immediate shrinkage in the demand from the country for the products of others' labor. When there is inability to buy as usual, the old is not replaced by the new until sheer necessity compels the impairment of capital to supply absolute needs. The natural result is that city producers find their employment restricted, and curtail their consump-

tion of others' products. Stagnation of business becomes general, and both capitalist and laborer complain that "times are hard". Whatever is done to increase the prosperity of the farmer, increases the prosperity of every class that has service of some sort for sale. If the condition of agriculture is not as satisfactory to-day, gentlemen, as we would have it, I can at least congratulate you upon being engaged in farming in one of the very best states of the Union,—best not only in respect to soil and climate, but also in respect to the character and temper of the people. Whatever burdens agriculture unnecessarily, whether it be the fraudulent adulteration or counterfeiting of food products, or unjust taxation, or what not, we are not content to bear. Ohio soil is fruitful of intelligent convictions, and gradually we demonstrate the possession of courage and ability to do our own thinking. We also recognize the fact that we are encountering the competition of cheap labor in other countries, and are endeavoring to win by the use of greater skill and intelligence in our work.

As you see, the program for this meeting could hardly be made better, and every gentleman upon it is an Ohio man. This is security for the quality of the feast Secretary Miller has provided for us. You are invited to participate in the discussions as far as time permits. The rule of last winter's institute will prevail, requiring the discussion of any one topic to cease when its allotted time has been consumed.

President Agee: The next thing in order, according to the program, is an address by Mr. H. Warren Phelps, of Westerville, Ohio, on the subject: "How Can Clay Subsoil Lands be Prepared to Produce Good Crops in Seasons of Drouth?"

ADDRESS OF H. WARREN PHELPS.

This subject is one of very great interest to the farmers and live-stock breeders of Ohio, also to those who are engaged in other kinds of business, and to all consumers of foods. When the farmers fail to produce good, rich crops of grain, hay, vegetables and fruits, they fail to furnish the quality which produces rich, juicy roasts of beef, mutton, pork and poultry, and a supply of gilt-edged butter, fine, rich eggs, etc. The live stock is fed sparingly, the produce of the farms does not appear so plentifully in the market places of the cities and the cash received is limited with which to purchase goods.

All business men feel to a greater or less extent the effects of the losses sustained by the farmers.

This paper will treat of the question in a matter-of-fact manner and from actual practice and observation.

It is with some feeling of hesitancy that these plain facts are presented before this great Ohio Institute, composed as it is of men who have been able agriculturists for a half century, and others of lesser experience in agricultural pursuits. All have their ideas as to the proper methods of dealing with the various kinds of soil in order to get the best results. The more aged men have witnessed the transformation of lands from the primeval forests to their present condition and know what was the virgin richness of the soil.

The season for crop raising of 1895 will long be remembered as one of the most disastrous ever known by the middle-aged farmers of central, northern, and eastern Ohio.—From May until November the drouth was severe and almost continuous. The clay lands were almost barren of crops, where left in their natural condition of shallowness of soil, after the removal of the forest timber and native grasses.

Clay soils with stiff, tenacious clay subsoils are very stubborn, retentive, adhesive and obstinate, retaining water, holding closely together, not porous; difficult to break asunder, entirely opposite from the nature of the alluvial soils which abound in the valleys along the rivers and creeks.

Many years of experience in the cultivation of this kind of clay soil, has proven conclusively that the natural condition after the destruction of the forests on such lands, was to produce grass, the surface of the soil was formed by rich deposits of leaves falling annually for ages from the trees, these leaves being rich in mineral and potash formed a perfect fertilizer for the native grasses, no doubt the greatest net profit has been realized from grazing these lands.

For the first few crops of grain after plowing this kind of soil, there is a profit, but soon the natural surface fertility is intermixed with the clay subsoil and the result is light crops, and year after year the toilers on these soils meet with reverses, the ground becomes filled with water during the winter and spring months, this water filters down through the surface soil and stops when it arrives at the stiff, hard-pan subsoil, ten, twelve or fifteen inches below, there it lies until evaporated by the heat of the summer sun. The roots of plants penetrate to this mass of water and clay but get no sustenance, and when the water is evaporated the clay gets hard, and no good can be accomplished by surface cultivation of the growing crops. There is no vitality in this lower soil, and all fertilizers applied upon the surface, even if washed down into the subsoil, are of no benefit to plants, as the coldness of the earth prevents life giving. There is too much moisture in the soil, and when the entire moisture is evaporated hardening of the subsoil prevents the air from penetrating.

In drouthy seasons the subsoil hardens and the roots of plants cannot go down into it. The sun's rays penetrate to the depth of the roots, the soil is dried, the roots are dried and the plant dies.

To prepare these soils so that they will successfully resist drought and produce good paying crops, they must be deepened, the water must be drained off during the wet seasons, light and air must be admitted.

We must have depth of soil, fertility and thorough cultivation in order to secure good crops of grain, hay, vegetables and fruit.

To deepen the soil we must ditch and tile drain. When we dig down some ten inches in this clay in moderately wet seasons, we find much more water generally than we find near the surface, below that the earth is dry, no water can penetrate, and should we cut ditches to the depth of three feet, the proper depth to lay tile, put in the tile and cover them over, the water can only get into the tile from the top. The sides of the ditches are hard, not porous, and the tile drain seems to be of little service.

A much better plan seems to be to plow the ground in narrow lands of thirty feet, which is about the proper distance apart to have the drains. Plow these lands three or four times, throwing up a high headland, and making a deep water furrow, by this means the water furrow may be deepened to two feet, it is not very difficult to spade another foot in depth; then lay the tile, cover with straw about four inches, then shovel in the dirt, filling in one foot, and leave the field in that shape during the summer. Sow the field to oats, then after harvest fertilize deeply near the tile drain, with barn yard manure, or, if there is no such material on hand, cover well with straw or light brush, and plow under. Pursue this method of plowing and manuring each year, until the field is level, the land then is in fine condition to allow the water to pass down into the drains; it is also full of fertility; the soil is porous; the subsoil is ventilated by means of the tile drains, and neither top soil nor subsoil will get dried out.

There is always moisture in the air, and the air carries it into the tile drains and up through the porous soil to the surface.

Every little shower of rain is taken up by the surface soil; and when these drougthy seasons occur the sun's hot rays do not penetrate to the roots of plants; the roots of these corn and potato plants, are so deeply imbedded in the earth, finding fertility in abundance, that the heat of the sun does not affect them; strength is furnished to the stalk of plants and they retain vigor, good color, and finally produce grain, and tuber without rainfall.

Déepering of the soil is the first proposition.

There are two other propositions; fertilization and cultivation; all three must be applied in order to make a success in getting good crops during drougthy seasons.

Fertilizers not only enrich, but loosen the soil, and by fertilizers I mean farm produced, coarse quality fertilizers. Any good commercial fertilizer may be applied to the surface, then the home made fertilizer plowed under. This may be clover, or stable manure made from grain, hay and fodder. Deepen the soil by plowing an inch deeper at each plowing until a depth of ten inches is secured and coarse fertilizing material put down to the bottom of each furrow.

There should be thorough cultivation before planting. Fining of the soil is a great preparation in the beginning of a drougthy season; grain planted in fine compact soil germinates quickly, and when the soil is deep and fertile, the roots grow very rapidly, pushing up a strong, healthy stalk.

We now have the soil prepared to successfully withstand drought, and to produce good crops during dry seasons. This is all that was intended by this paper.

But we are confronted with the proposition that the manner of proceeding is too expensive, that many farmers who own and cultivate these clay soils are not able to so tile drain their lands.

Those men can plow their ground in narrow lands, each year throwing up a high headland and making a deep water furrow, deepening each time of plowing, until the water furrow is two, or two and a half feet in depth; then ditch to proper depth and lay the tile. Where this plan has been tried the increase in crops over and above the level culture, has been enough in three years to pay all expense of the cost of tile and putting it down. Labor and patience, with economy will insure success. One field after another can thus be reclaimed, but we would advise that a part of the farm be left in its native grass state.

A number of years since, about two acres were taken from an old native grass meadow and fenced with the corn field, and the land was plowed. The fertile soil was not more than four inches in depth, which was the depth of the plowing. One fairly good crop of corn was raised, the next two seasons were drougthy and the crops were almost entire failures although good tillage was given. The fore parts of the seasons were wet, but after June first quite drougthy, and the ground became very hard and dry. In September, sixty-three rods of five inch tile was laid two and a half feet in depth through these two acres, the ground was plowed and well cultivated, then wheat was drilled in. There was applied on the surface of this wheat during the next winter, about twenty two-horse loads of stable manure.

Those two acres produced forty-eight bushels of good merchantable wheat, selling for eighty-six cents per bushel; the price received fully paying for the cost of tile and draining the land. During the past ten years good paying crops of grain and grass have been grown on those two acres, the same as the balance of the field which was tile drained and plowed deeply previously.

Such clay lands thoroughly underdrained can be cultivated much earlier in the spring, than the same kinds of land which are not tile drained.

Any farmer can thoroughly tile drain one acre of land and deepen the soil. The result in crops carefully cultivated and harvested will furnish the means with which to improve and reclaim, in the same manner, other acres; until the entire farm is well tile drained, and the soil deepened.

The boys then will want to stay on the farm and raise paying crops.

One of the most productive farms in this, Franklin County, is thoroughly tile drained and the soil thus deepened. It has produced large crops of corn, potatoes and hay, during the past droughty season.

Another farm, in Delaware County, was thoroughly tile drained three years ago, and it has produced paying crops since. Both of these farms previous to tile draining, were not sure crop producers.

President Agee: Gentlemen, this is a most important subject, treated in a practical and intelligent manner. We hope that the discussions of each topic will be full. I have asked Mr. A. W. Livingston to open the discussion of this question.

Mr. A. W. Livingston: Gentlemen, I suppose that about one-third to one-half of the lands in Ohio are what we would call clay lands. As a matter of course, the subject that is now before us would interest that proportion of the inhabitants farming clay lands. Just how to do this work and do it thoroughly is the question to be drawn from this paper. From what I learn from others' as well as my own experience in clay subsoil, I think that the best plan is thorough drainage, and that may be accomplished in different ways. Mr. Kellogg, of Iona, Michigan, gave us a very interesting lecture at the Horticultural Society's meeting a year ago at Toledo, and he gave us an outline of this clay subsoil which I thought was very good, especially in a dry season, and he told us there at that time that the best way would be, where it could not be ditched thoroughly, to subsoil with a subsoil plow as deep as it was possible in order to contain the water during the season, that the plant above ground may receive nourishment and to retain the water that would be in the subsoil land; he told us that you would have to make the top of the land very fine indeed that it may retain the moisture below and that the plant would be able to draw from it. If we plow the ground in a coarse manner on clay soil and it is not packed very closely we cannot expect to get good results. For my own part, the latter part of my life in all our gardening processes we aim to put a crop of clover on any piece of land that is left in any way. If we intend to plow it up the next spring we always sow it to clover, and we think it pays well. The roots reach down into the ground further than any other and they are supplied with nourishment both from the air and from the soil. And from the lectures that I have heard on that subject during the past season I am led to believe that it is very valuable. There is no fertilizer I ever used that would do so much good in so short a time. Several years ago I leased a piece of land, now in the city of Columbus, out near St. Mary's College, and a portion of it was subsoiled very thoroughly; the clay soil was subsoiled about eighteen inches deep and it produced past all calculation, while the crops on the flat land near the water did not do well at all.

All these items that we gather up from time to time are only so much added to our store of knowledge. Mr. Chamberlain gave us a very nice lecture on ditching, and his is very poor clay land, very hard. He

cannot ditch it on an average of more than about two and one-half feet. I think that clay land well prepared is the best land of our country. It will last longest and go the farthest. The bottom lands of course will not produce all kinds of crops, nor will they last like the upland unless they are overflowed every few years.

I have not thought much upon this subject and therefore I will leave it for others to discuss.

Mr. McCormick, Gallia County: Mr. Chairman and gentlemen, I come before you with fear and trembling on this question after having listened to this well-prepared paper and also to the discussion of Mr. Livingston. I will attempt, however, to express a thought or two that has come under my observation the past season. The topic that is presented here, "How Can Clay Subsoil Lands be Prepared to Produce Good Crops in Seasons of Drouth?" seems to be a very fitting one at this time, after having passed through such seasons as we have, I may say in '93, '94 and '95, and especially the latter. It seems that if there is any good way by which we can get good results we should all have the benefit of it.

The first thought I have upon this subject is that I should remove all surface water by thorough tile drainage, and thus we not only dry the soil on top, but aerate the soil as well. In southern Ohio for the hoed crops I should plow as early as practicable, say in February, if the soil is in proper condition, and I should, before planting, most thoroughly till the soil. I need not tell you what tools should be used in this because you are all familiar with the tools and implements now used for the thorough preparation of the soil. Then after planting my crop I should go through a thorough tillage of the crop. It should be shallow in order that a thorough mulch may be formed on top to retain the moisture. This treatment, as I have suggested, has produced wonderfully, considering the excessive drouth we have had. We have never suffered so much for lack of moisture in soil in southern Ohio in my experience as we have during the year 1895, even for the crop on our pastures. I doubt not that it will work to our advantage as it will open up new avenues of thought and new modes of procedure for the best preparation of soil for our work.

Mr. John Larimer, Fayette: Friends, I have been conducting an experiment on one field for ten years, touching on this subject. I am not accustomed to speaking in public, but I will try to make you understand the experiment and perhaps do some of you some good.

The field was in pasture, timothy and clover, for ten years previous to the experiment. Ten years ago I broke it up and raised two crops of corn, followed with wheat, and in the spring sowed it to clover. In the winter, the first week in December, I turned that clover and stubble and let it lay until spring, and tried to plow a little deeper, and in the spring harrowed the ground with a rolling harrow and found that the winter had prepared the ground in the very best possible manner for corn planting. I raised

a fair crop of corn, sowed it to wheat again, then again to clover and plowed it the first week in December; turned the clover that was just one season's growth under, and aimed to plow a little deeper again. I raised a better crop of corn and a better crop of wheat, and continued that until I plowed it four times and raised eight crops, four crops of wheat and four crops of corn, with four plowings. I have increased the crop of wheat from sixteen bushels to twenty-eight bushels and the corn about one-fourth, and have a good crop on the field this year. My plan by this experiment proves to me that we want to cultivate our land so as to retain as long as possible all the rainwater that falls upon it. None of it should run away if you can help it, because if it runs away it carries the cream of your farm with it. I thank you for your attention.

Question: What kind of land was it; sandy or clay soil?

Mr. Larimer: It is clay land. Part of it is black land, but the up-land is clay.

Question: Did you use fertilizer on any of it?

Mr. Larimer: Yes sir, used fertilizer on two crops of wheat and raised twenty-eight bushels to the acre. I used one hundred pounds of "Gilead Phosphate," made at Cincinnati.

Question: Did you get a good set of clover?

Mr. Larimer: Yes sir, I got a good set of clover, and the freezing and thawing of the land through the winter seems to prepare the new land that is thrown to the surface in the very best manner.

Question: What time did you sow it?

Mr. Larimer: Sowed it from the middle to the 20th of March.

Question: How deep did you plow your ground?

Mr. Larimer: About seven inches. I have just as good soil seven inches deep now as I had three inches deep when I commenced this experiment on the clay land, producing nearly as much as the black land in the same field. The land is old. It has been farmed eighty years, but it produces better to-day than ever before.

Question: Did you use the fertilizer the last crops or the first?

Mr. Larimer: The last crops.

Question: Did you leave any part of the field that you didn't try fertilizer on?

Mr. Larimer: No sir, but I have other fields of the same kind of land that I did not.

Question: Did you have any tile drainage?

Mr. Larimer: Yes sir.

Question: I thought you wanted to retain all the moisture that fell?

Mr. Larimer: Yes, I do. I want to carry it off in the drains as clear as a crystal.

Question: I understood that you wanted to keep the water on the land.

Mr. Larimer: No sir, I didn't intend to be so understood.

Question: I would like to ask if the more wheat you grow upon the land the worse you are off?

Mr. Larimer: No sir, I don't consider it that way. We have learned to feed wheat to the hogs down our way.

Question: How far is it down to the hard-pan in this land?

Mr. Larimer: I suppose there is no hard-pan there. The under-soil is mixed slightly with limestone pebbles. I do not think we would call it hard-pan.

Question: Did you treat the adjoining fields the same as you did this one, except the fertilizer?

Mr. Larimer: No sir, I have not been able to try the experiment on any other fields, from the fact that I wanted to be satisfied with this one.

Question: Perhaps the fertilizer did that?

Mr. Larimer: Well, as far as I have seen, I think not. I believe in giving a field all the chance I can. If I raise a big crop of wheat that takes lots of strength, I want to put that strength back on to the land.

Question: Did you apply any other fertilizer except the commercial fertilizer?

Mr. Larimer: Yes sir, I used barnyard manure.

Question: I would like to inquire whether the gentleman ever used subsoil plows?

Mr. Larimer: Yes sir, a part of this land I subsoiled. That brings up another question, however, which is not in this topic. There were about six acres of this field which were clover sick, and I was talking in our own institute about that, and a very old man said he had never heard of such a thing; didn't know land could be clover sick, and I never was certain about any but this field. There were about twenty acres of land that would not produce clover, and my part of it when I came into possession of the farm would not produce wheat. I tried it three times, but without success. I then sowed it to grass and it lay a number of years, and when I broke it up the second time I subsoiled it and plowed it about a foot deep, and it took at least twenty years to bring that six acres of land up so that it would produce clover or wheat.

Question: What benefit did you derive from subsoiling?

Mr. Larimer: I could raise a crop of corn, but still it would not raise wheat.

Question: Would it raise clover?

Mr. Larimer: It would not raise clover then. I believe that the same elements that produce wheat produce clover. If the element is out that will produce clover you need not sow wheat; that is my experience.

Question: That is the ground you subsoiled?

Mr. Larimer: Yes sir; however, it has got over it now. I suppose using the commercial fertilizer had something to do with it. If I had commenced twenty years ago I could have brought it back a good deal quicker.

Mr. Wells: I would like to ask a question, and in doing so I want to make a little explanation. I have a clay soil, underneath that is a hard-pan and below that we have a sand, and below that we have a quicksand. The quicksand is struck at a depth of about six and one-half feet. The water, it seems, will not go through this clay and sand or hard-pan, and the clay is in such a condition that it must be tilled to produce a crop. My method has been to tile at a depth of about twenty-six inches. It is difficult to go deeper than that on account of the hard-pan being so hard, and over the top to relieve the tenacity of the clay I have put on one and one-half inches of sand in a section of it. This I stir through it the best I can. This is my first experience with it. It is soil that at present will not take clover. I wish to ask if it would be advisable to go through the hard-pan and let the drain drop into the quicksand, which would be the nearest outlet; and if I continue to put sand on this stiff clay will that relieve it?

Mr. Phelps: I believe that I would just tile the depth that he is tiling now and every few rods I would drop down to the quicksand and give the water an opportunity to go down to it, down into the sand. That, it seems to me, would be just as good a drain as to dig to the quicksand. Say every six or ten rods dig down to the quicksand and place tile.

President Agee: I see Director Thorne, of our Experiment Station, in the room. We would be glad to hear from him.

Director Thorne: Mr. President, I think I cannot answer that question. I am not qualified, but I should endorse, however, the recommendation made by the last speaker, to dig through into the quicksand and let the water down. I am not prepared to give any suggestions that would be proper.

Question: How do you know that there is water in the quicksand that would let the water come down, the surface water?

Director Thorne: It has been tried and proved by experience.

Mr. Dickey: I don't want this question to get us off the track. I am going to try to answer it satisfactorily to my own mind, and the rest of you can agree or not, as you choose. It is the question Mr. Phelps discussed. We all believe we should tile with this hard subsoil underneath, and in my lands, where I have unlimited means, I would have an engineer lay tiles systematically with as little fall as possible, and then in this season of drouth close the lower ends and let the windpump in at the upper ends.

Mr. Phelps: I would say that the air passes up through the tile drain and as the ground is more porous since the water is out, the air passes up through the clay soil and the soil becomes porous. The reason I advocated laying the tile deep was to deepen the soil so the water can pass down into it. We have tile drains three feet deep, and for three years the water would not pass into them through the heavy clay. We have put in a load of stone in the spring of the year and found the water standing there, within six inches of the surface.

President Agee: The discussion has been very interesting indeed.

You will observe by the program that we are to have Mr. Cowden with us to discuss the question, "Should the Ohio Farmer, With the Present Prospects and Conditions, Keep Sheep?" We have word from Mr. Cowden that he cannot be here this morning, and Mr. F. A. Derthick, who has an address assigned for tomorrow morning, will now give us that address on "The Lubin Proposition."

Mr. F. A. Derthick then addressed the convention as follows:

ADDRESS OF MR. F. A. DERTHICK.

Mr. President and Gentlemen of the Convention:

My speech is not quite ready yet. I was upon the program for to-morrow and so my speech has not been written, but I have set down a few points here concerning which I wish to speak, along the line of the topic assigned me. Perhaps a word of introduction may be in order. I have been greatly interested in the discussions that have gone on and surely feel a great desire to increase the products of our farmers. The fact that the country seems filled with produce of every description shows that farmers have been improving all their methods. But while it has been claimed on this floor this morning that we have had three successive years of drouth, we have gone on and our crops have been good in almost the whole country. I think it is wise to adopt every means and method that will increase the amount per acre, and yet, friends, there are a great many people in this country to-day who think there is something wrong aside from that; that it is not so much that our methods of farming are not good as that there is something wrong at the other end of the line. If we see a stream that is turbid and unsightly we conclude that something is the matter, but we do not undertake to reclaim and purify the stream by dipping the water out. The proper way is to go up to the source and see what is wrong there. Somebody or something may be fouling the source of the stream, and it would be folly to try to clarify it below. I say there are many people in this country to-day who think that there is something wrong with the soil. I am going to make a proposition and any gentleman in the room will be at liberty to disprove it if he will. That is this: I undertake to say that there is not a farmer in this room who for the past year, at ordinary straight farming, no matter how productive his farm has been, there is not a farmer here who has made satisfactory progress. I do not mean those who are within the shadow of this city, so that you can take advantage of the market here at your door. We are not all near Cleveland or Cincinnati or Columbus or any other city. Some of us are remote from such markets and obliged to depend upon the more substantial products of the farm. And I insist, gentlemen, that there is not a farmer in the room who has made money this year, no matter what his crop is. Now, I do not stand alone in this, because a little more than a year ago the representatives of this great people as they stood together in the Congress of the United States made such a report there that the consensus of opinion was that agriculture was depressed. Something was the matter that farmers were not making money in any necessary degree; that agriculture was running down.

Well, now, to prove the truth of what I say, Mr. ——— of Missouri just a little more than a year ago introduced a resolution into the Congress of the United States setting forth the fact that agriculture is depressed, and it was received with such universal consent that Congress passed it unanimously. They conceded this to be true, and they charged an important committee of Congress to inquire why it was depressed and to suggest a remedy. So I insist that agricultural

depression is conceded. I was glad to see that the Governor of the great state of Ohio seemed for almost the first time to notice agriculture and speak of its great importance. Have you ever thought that the united product of this country in agriculture is something over four million dollars each year, a sum away beyond our power of comprehension, and it underlies every other interest? As this great product, this princely annual heritage to the people of this country, as it leaves the tiller's hands, sustains in its way every other interest, all other interests depend upon it, so that we will agree that it is worth looking after.

The committee selected to solve this question, entered at once upon its duties, and it began to summon prominent farmers from all over this country, men who had been leading in agricultural lines, inviting them to come down to Washington and say what they thought was the matter with agriculture, and to suggest a remedy. And men from all over the United States went down there in response to that invitation, and, strangely enough, they did not agree. Some thought it was adulteration of food, others the tariff, some the silver question and others over-production. Well now, I am not going to ask your attention to anything except one proposition.

Mr. David Lubin of California who was raising wheat on a thousand acres of land and who was an importer of goods to the amount of more than a million dollars a year, was competent to speak upon this subject, and he was invited to come down to Washington and appear before the committee, which he did, and when asked the question concerning the depression of agriculture, he immediately said, "Gentlemen, it is the unequal, onesided and unjust protective policy of the American tariff."

Now, I trust that nobody will jump at the conclusion that Mr. Lubin is a free trader. He did not express any opinion on that. He simply states it as an abstract proposition that it is the unequal system of the tariff, and he says the time has come in this country when we should all be free trade or all protection. He almost seemed to catch an inspiration from President Lincoln's declaration that the time has come in this country when we should be all slave or all free. He says we must be all free trade or all protection. He says that the policy of this government to-day is and is likely to continue to be for several years protection. Inasmuch as that is true it should be distributed over the whole field of interests in this country and that there should be no class that is not favored and that does not receive advantage from that protective system. He says this is not true now, but while this protection exists at all it should be perfectly balanced; the wheel should run steadily, but it is now a load and goes around with a jerk, and the farmers have the little end of it.

Now, if you are disposed to dispute that, I would be glad to have some gentlemen rise and suggest any single agricultural staple product in this country that would be benefited in any material way by protection in New York harbor. Do any of you think that a dollar per bushel even of protection in New York harbor, would raise the price of wheat in this country? Would it corn? I would say no. Why? Because we do not import those products. We have a surplus here; we have them to sell. There is none coming in and no country in the civilized world will bring wheat to a country where it is already a drug, with three thousand miles between them, and then pay the protective tariff, so that in our time a protective tariff in New York harbor would not benefit us at all. Mr. Lubin of course does not include truck farming, but he is talking about the staple products, and a staple product I take it is something that we have for export so that there is no expectation of any of these products coming to our shores.

Brother T. R. Smith, as I understand it, was to be here to discuss this paper, but Brother Ellis will lead in this discussion and I hope that every gentleman here

30 A. R.

will constitute himself a committee to notice any impractical feature in this proposition and be ready to point it out. Of course it has been the proud boast of one of the political parties of this country that the farmer is protected in equal measure with every other interest in that it would bring a great army of consumers to our doors to eat our staple products, and the theory has been that if the manufacturing interests can be so developed, that it would necessitate a sufficient number of our foreign friends coming here to work in their shops to require all our surplus, then the question would be solved and the farmer would be protected. Mr. Lubin shows that this is faulty in so far as past experience is concerned, at least. I will point out this illustration briefly: Suppose that a manufacturer established his plant within a half mile of our neighbor, Mr. Jones' farm, and manufactures agricultural implements on a gigantic scale, and a thousand or five hundred employes worked at the factory making agricultural implements, and I wanted to buy a binder and I asked him the price of it. What price is it? It is the price in the market closed against the world. No man can bring a twine binder to this country from any country under heaven without laying down the protective tariff fee at New York harbor. Now, I want to buy a plow or a harrow or riding cultivator or in fact the whole line of agricultural implements and I buy them of my neighbor. I am looking forward to the time when his employes will buy my produce. I buy the whole line of him and at his prices, which are gauged for the United States, and in a market closed against the world kept for my manufacturing friend. Now, after I am supplied, and my crops are ready for consumption, our manufacturing friend comes to my farm and says, "I want to buy a thousand bushels of wheat for my employes." Now, gentlemen, if ever the protective tariff is to benefit me it is now. Here is the army of consumers; here is the wheat. Do I tell him what he will pay for the wheat? No. I ask him what he will give for the wheat. He cannot tell me then and there, but he takes the paper and looks at the price of wheat in Liverpool; and is that the price he pays me for it? No. If so, it would perhaps not be so bad. The price he pays me is the price it sells for in Liverpool less the cost of transportation to Liverpool. That is the price he gives me for my wheat, although it is not going to Liverpool at all, but is going to be eaten within a half mile of my farm. I have bought everything I needed in a manufacturing line in a protected market, and I have sold my wares in a market that is open to the pauper labor of the world, and to which every country has ready access, without let or hindrance, and without any protective tariff.

Mr. Lubin says that this condition of things cannot go on. I do not know that anybody will dispute the statement that the amount of wheat that we export sets the price on all of the wheat produced in this country. I have a letter that was written by Mr. George S. Stone, who is secretary of the Chicago board of trade, in which he says that no man will ever pay a cent more per bushel for wheat than the export price. What is the export price? The price in Liverpool less the cost of transportation, and if you have been upon the Chicago board of trade you have noticed that all of the affairs on that floor are dominated by the cablegrams that continually arrive from Liverpool.

This has been the condition of things in this country for a great many years and agriculture in this country in recent years has been prospering. What has brought about the change? Do not understand me to say that I am prophesying gloom and despair and failure and ruin to agriculture, but I do say, and you will all agree that there is something wrong. We are not getting that reward for our labor that we merit and that the importance of our vocation demands. Mr. Lubin says that there has been a tremendous change in the condition of things in this country in recent years and that this change is to be permanent—that it has come to stay. He insists that until within very recent years the United States led the

world in the use of agricultural implements, and that so long as that was true we could compete with the pauper labor of Europe and of the world; that so long as that pauper labor was spading the wheat ground by hand and reaping it with the sickle and performing all the labor by the most laborious, slow and expensive process by hand, that the man who was riding the twine binder and the sulky plow and all the modern implements, could compete with that labor, although he could be hired for eight cents a day. But he says that our manufacturing friends have shown the disposition that England has shown in recent years, to furnish cheap food for the people. England has seemed to feel that if she is to demand and command in this world, as she seems bound to do, she must have two things: cheap raw material and cheap food, and she has set about to get cheap food with a great deal of vigor. She has been over to the United States; she has copied our manufacture and has set in motion, larger than ever, agricultural implements and appliances; and when her armies have marched in recent years to conquest they have been followed closely by a train of agricultural implements; and when the people were subdued and practically under her dominion then she placed agricultural implements in their hands and set them to raising wheat for the employees in her shops. He says that the whole condition is changed; that the time is past and gone forever when upon our high priced land and with our high priced labor we can successfully compete with men who are working over there for eight cents a day. The whole condition is changed, and the point, it seems to me, is well made.

Now this in so far as I understand it, is Mr. Lubin's proposition. He says what you may have already inferred, that every other interest aside from agriculture in this country, shares in the advantage of the protective tariff, but that from the necessities of the case the farmer does not. The manufacturer who is making twine binders, if he goes to buy a suit of clothes has to pay a protective tariff on his clothes because cloth is protected, but when he sells a binder he gets it right back again.

I have friends who are working in a chair factory in this country and they have been working for high wages. Nobody can bring a chair to this country unless he pays the tariff, and the men working in that factory when they buy a suit of clothes have to pay an advanced price, but they get it right back in their wages. And so it is in all lines, the lawyer, the doctor and all of our salaried people. Their pay was all adjusted at a time when agricultural products were more profitable and it has remained at the same place. For example a man may have been receiving five thousand dollars salary when we were getting a dollar a bushel for wheat, but while wheat has steadily gone down, all these other expenses have remained just the same.

Now, they ask Mr. Lubin, what are you going to do? Why don't you cut down your area, raise less, and then you will solve the problem? And I confess to you, friends, that that is right. If you have a community in which five hundred bushels only of wheat is needed, and you have no chance of getting out, and have one thousand bushels there to sell, what are you going to do? We cannot dictate prices, but if we would cut down our area and produce just the amount of wheat that is needed in this country, then a protective tariff at New York harbor would be a benefit to the farmer. Why not do it? That is an easy thing to do. Mr. Lubin says that would be national suicide, and he tells us why. We are importing into this country about nine hundred million dollars' worth of goods each year, manufactured abroad. What are you going to use to pay for those goods? What does England want for the things we buy of her? Does she want twine binders? No, she makes twine binders at a price that we cannot sell her manufactures of any description. What does she want? Agricultural products only

or else the gold. Can we pay her for this nine hundred million dollars of import, with gold? Everybody says no. It is almost ruinous to us to-day to furnish the gold that must go abroad to pay the interest on the bonds, and are you going to add this nine hundred million dollars necessity to it? No. What will you do? Pay it with agricultural staple products, and if you cut down the area of production that means national bankruptcy and ruin. Something must be done. Agriculture is going down and there is no use denying what Mr. Lubin says on this line, that is, that it is impossible to benefit the farmer with a protective tariff.

Mr. Lubin here suggests a remedy which has come to be talked of as "The Lubin Proposition" and that is a bounty on agricultural exports, that is, on staple products. He proposes that the government pay a bounty, some reasonable bounty, upon that portion of our staple products that go abroad; that is to say, the production of wheat in the United States in 1892 was about six hundred million bushels. Two hundred million bushels of that was surplus, or rather, we exported it. What would be the result under Mr. Lubin's proposition supposing that the bounty was five cents per bushel? The farmers would get five cents per bushel on the two hundred million bushels, amounting to ten million dollars. It is not a bounty on production, like the sugar bounty. How much would the farmer get out of it? He insists that he would get thirty million dollars because if the government were to pay five cents on wheat, when the manufacturer came and wanted to buy a thousand bushels of wheat, do you suppose he would pay the Liverpool price less the price of transportation, for wheat to be eaten within the shadow of my farm? Would I sell him my wheat? No. If a man down here were paying four cents for hogs to-day and a man up there four and a quarter, how many hogs would the first man get? Remember the price of wheat in Liverpool regulates the price of wheat for the world. So, if my manufacturing friend wanted a thousand bushels of wheat for his employes he must lay down the five cents that the government pays as a bounty if it goes to England.

Under Mr. Lubin's proposition it would not be an expensive thing for the government to do, and under this proposition our friends who are engaged in other vocations in life would contribute somewhat to this protective system. A bounty of five cents per bushel would raise the price not only on the exported product, but also on that which is consumed at home. And he says it would be fair and that our friends upon the other side, the salaried men, the lawyer and the doctor and others who are getting prices not adjusted to agricultural prices, can well afford to do it.

Now, I am going to close, because I apprehend there is a number of gentlemen who desire to discuss this question, but I want to add a word of caution. I insist that Mr. Lubin's proposition is very ingenious. Some of the points that he makes seem to me to be well taken and hard to contradict. I realize, after considerable thought upon the matter, that there are impractical features connected with it. There seems to be some well grounded objection, but so far as I have noticed they have not been advanced. They are something like this: My free trade friends will say if you will inaugurate a system of pure free trade in this country that that will solve the problem and be much better than Mr. Lubin's proposition. But gentlemen, that is no response or reply to Mr. Lubin. He does not say it would not. My free trade friend must admit that if we are going to protect anybody we ought to protect all. Do not say that free trade would be better. He assumes that the present policy of the government is protective and inasmuch as it is so, it should go all the way around.

Here is another valid objection that will be hard to answer, and yet it has no force in my opinion: Mr. Lubin, granting that your proposition be true and that the farmers should receive all of this protective tariff that is accumulated in New York harbor and which goes to Washington to pay current expenses of the government and the interest on the bonds and the bonds themselves, if you give it

back to the farmers where will you get anything to pay your running expenses? That is a serious question. We elect Congressmen to provide revenues for the government, and just because in the past it has been an easy thing for them to steal that from the farmers, it is no argument that they should keep on doing it. You give a man five dollars to-day and five dollars next year and so on right along for eleven years, and if when the twelfth year comes around he don't get his five dollars he will call you to an account, and forget the fifty-five dollars that you have made him a present of. Now, Mr. Lubin says that all of the other interests have been stealing this tremendous amount, that has been required to run the government, from the farmers of this country and they propose to stop it. Now, do not urge free trade as an objection to the proposition; do not urge that you would not know where to get the money, because he does not. Think of some valid objection. Think of some staple product that any gentleman here can suggest upon which a protective tariff would yield an important revenue to the farmer in any such degree as a protective tariff on the twine binder benefits the manufacturers thereof.

President Agee: This question could hardly be presented in a more interesting way. Let me emphasize one thing and that is that we are not discussing the question of protection or free trade. It is only that of bounty. In the discussion, then, we will keep clear of that which we should not discuss and which does not come up in this question. The question before us is the question of bounty upon agricultural products. This will help to keep the atmosphere clear, you know. (Laughter.) In the absence of Mr. T. R. Smith, of Delaware, who was to speak upon this subject, I have asked Mr. S. H. Ellis to open the discussion.

Mr. S. H. Ellis: I have given some thought to Mr. Lubin's proposition and have read his published articles upon the subject, and I have tried to follow Brother Derthick in his remarks. I take it that up to within the last eight minutes of his talk he was not giving Lubin especially, but Derthick (laughter), and I want to underscore it. I believe every word of it. There are men in this house who have heard me say that no tariff that this government ever had ever put one dollar into my pocket. The products that I sell, as a rule, are pork and wheat, and how can protection help me? Now, Mr. Chairman, this being the case, I do not see how we can keep it away just that far from our political prejudices. I looked around over the house and I could see (for I know several persons here), the faces of those who endorsed what Brother Derthick said, and those who opposed his theory, and they looked very different. I could see a different expression. Some were just throwing it off as if to say, "Bosh, there is nothing in that." Now, I tell you there is "lots" in it with farmers.

A Delegate: "Millions in it."

Mr. Ellis: We have importation of manufactured products from the old country away up in the millions, and this the farmers have to pay; eighty per cent. of the exports come from the farmers, eighty cents out of every dollar to balance up these imports come from the farmers. The question all the time with me has been the one that Brother Derthick urged

in his last proposition. This government costs a little over a million dollars a day, without running our legislature when it does not meet. (Laughter.) Now, this money has got to be raised, and it has got to be raised from somewhere where wealth is created, and industry is the only thing that creates wealth. Now, suppose that we would ask the government to hand over to us farmers on our wheat we sell, and our pork and beef, then the farmer would get some advantage of the protective tariff. Suppose that the government pay back to the producers of the staple products—for we have got to feed our great cities, and then we have got to feed the great, densely populated cities of the old world, for they have got to get a great part of their supply from America—supposing that they pay back to us all they get from the meagre exports of manufactured products, twenty cents on the dollar, eighty per cent. comes from the farmer and that leaves twenty per cent. to come from all other sources—suppose that they have to pay us out of a duty raised on the twenty per cent. of exports a bounty on this eighty per cent. that comes from the farmers, where under heavens will they get it? How will they get enough to run the government?

Now then, that resolves itself into this: I believe every point that Brother Derthick made, clear through. The only question is, how are you going to do it? I don't know how we can adjust it. I believe the wisdom and the statesmanship of this country, if it would take itself out of the incrustation of party politics, I believe there might be some means devised by which the industries of this country might be relieved of this terrible thing. The government cannot run forever with agriculture down at the heel. Agriculture is the basic industry of the world, and the outlook for business prosperity with agriculture down, is all bogus. It cannot come. Farmers have got to come up on a better paying basis than we have been for the last two or three years. I heard a well educated man say last Friday, at an institute I attended in the northern part of the state, "There is not a farmer in this community, and I am acquainted with all of them, that has made expenses and allowed himself a meagre pittance per day for his work." What is becoming of our farms? The farms in Ohio in the last twenty years have shrunk fifty per cent. They would not sell for fifty cents on the dollar to-day of the price they would have brought twenty years ago. What makes the price of anything? The ability to make it pay. If Mr. Lubin has a proposition to help us, I will hurrah for Mr. Lubin, but I want to see daylight through it better than I now can. We have got to pay the running expenses of this government.

Mr. Perry, Franklin: I am not a farmer. I used to be a farmer in the former part of my life when there was more money in it. I have met farmers in fourteen different states, during the last year, and I have been in forty-six different counties in my own state. I was forcibly reminded of what everybody else has said, when I listened to the first speaker, that

there is no more money in farming. I don't want to make a speech, but I simply want to compliment this audience here this morning for the course they are taking just now.

Mr. Hall, Columbiana: I am a little afraid I am off the question, "The Lubin Proposition," but I have been taking an agricultural paper published in Washington, D. C., for a number of years, and the policy proposed by that paper for the farmers of America is to cease raising these products, these staple products of which you have been speaking, to such an extent that we must necessarily export, when the price does not warrant the raising them, and instead of that raise those agricultural products which the United States does consume, that we are importing into this country, amounting to more than three hundred million dollars every year. In order to do that it is necessary, I believe, that these products have the same care that the government exercises over our manufacturing industries, that a tariff be placed upon a foreign competition until they have been made so profitable that people will leave the cultivation of wheat and corn and the other staple products and go to producing the products which do pay.

Director Thorne: There is one point in this connection I think attention should be called to, that is the history of this proposition in relation to the beet sugar industry in Germany. If I am properly informed, Germany has been trying this bounty on exports for a number of years. Under it the production of beet sugar has risen to such an extent that to-day sugar is cheaper than it has ever been in the history of the civilized world. The producers get some benefit from the bounty, but the price has steadily gone down.

Mr. Derthick: I presume, ladies and gentlemen, that Director Thorne has raised the only real objection, and yet Mr. Lubin has been told of that before and he says he cannot conceive a sufficient number of our people turning their attention to wheat to accomplish that result. But as far as Brother Ellis' first objection is concerned, we would have to go back to the farm to get the money to run the government. We know that there have grown up in this country vast fortunes and that while some of them seem to be accomplishing some good, in so far as endowment of institutions of learning is concerned by our millionaire friends, we feel as though these great fortunes were not sharing in the burden of public expenses to such a great extent as they ought; and the owners of those fortunes die occasionally, and somebody has thought of the idea of taxing inheritances, where people who have never earned anything suddenly acquire great wealth; and I would go there, Brother Ellis, for some of the expenses of running the government.

Now, our friend here stands up and says that we reduce that, that we are importing three hundred million dollars worth of agricultural products, and I would call attention to the fact that there is more than four hundred million dollars to be paid in gold; the farmers paying between seven

and eight hundred million dollars of this nine hundred million dollars that go abroad to pay for things we must have. So I think the question has not been successfully disputed yet. I cautioned the friends not to advance that question as to where we would get the money. That is not a fair question. It don't make any difference if we get it. There should be some way provided to raise this revenue from all our citizens. I would say I favor the protective policy and always have, but I recognize the valid objection that Mr. Lubin raises.

Mr. Horr: I would be sorry to see this discussion close without calling Mr. Derthick's attention to a fact and having him answer a point that has not been mentioned in connection with a question that Mr. Thorne raised, concerning beet sugar industry in the old world. The Lubin proposition of putting a bounty upon exports is not entirely original with Mr. Lubin, because there has been an experiment of putting a bounty upon a certain class of productions, for instance, upon the manufacture of maple sugar, as proposed in the Lubin proposition. And I would be sorry to see this discussion close, I say, without hearing from those who are in a position to discuss the result of the experience we have had in this matter of a bounty on products of our own country.

Mr. Derthick: This proposition, as I understand it, is entirely unlike that. The bounty on sugar was a bounty for protection on every pound produced and had entirely a different object. As I understand it, the proposition to pay a bounty on sugar was for the remote object of increasing the production of sugar so that people in our own country might raise the sugar consumed here. It had for its purpose the ultimate benefit of all our people and to assist the beet raising industry to get on its feet, but it was a costly undertaking. The government thought if it would foster the industry for a short time the time might come when we could raise all our own sugar and the bounty on production would then simply be on the exports.

President Agee: Are not the plans similar in effect? What would be the difference in the results, a bounty on production or a bounty on exports?

Mr. Derthick: This was what might be called an infant industry, that is, the sugar business, and the idea was to stimulate it until we could furnish our own people. It could not be carried on successfully without protection.

Question: What has been the result of this bounty on sugar, by way of increase in the manufacture of sugar in our country?

Mr. Ellis: It did not last long enough to make a show.

Mr. Wetherhill, Franklin: With regard to the last question, the bounty on the production of sugar lasted only a short time, yet previous to that, for many years, we had a protective tariff on it, and that did not stimulate the production to any great extent. We imported up to the repeal of the provision, perhaps, nine-tenths of our sugar.

Director Thorne: In the fall of 1892, when I was traveling through Louisiana, in one of the sections devoted to the production of sugar, I visited a large number of these industries which were at that time engaged in that business. I found there some magnificent establishments which had been built up in consequence of this bounty, and they were producing a very large quantity of sugar as a result of this bounty. I found in one place a large number of workmen employed, and I asked the proprietor the nationality of the workmen, and he answered that they were imported French laborers, and during the time of our visit there a cargo of these imported foreign French laborers was unloaded on the docks, for the purpose of going into the sugar fields of Louisiana.

And thereupon the institute took a recess until 2 p. m. of same day.

AFTERNOON SESSION.

Columbus, O., January 14, 1896.

President Agee called the institute to order pursuant to adjournment promptly at 2 o'clock, and announced that the first thing upon the program was an address by Dr. James H. Canfield, president of the Ohio State University, upon the subject of "The Use and Abuse of the Forests." Dr. Canfield was introduced and addressed the convention as follows:

ADDRESS BY PRESIDENT CANFIELD.*

I have been asked by your indefatigable Secretary to present in a very simple way, the practical value of our forests aside from that estimated in dollars and cents; with some illustrations in defense of the general theory of forestry.

He who walks through the world with his eyes open, and who reads history in a many-sided way, listening intently for every word of advice and of warning that may fall from the lips of the past, cannot be ignorant of what the forest has done for man, nor of what man has done and failed to do for the forest. He may know, as I know, very little about delicate tests of temperature and moisture; of the careful experiments that have been made in reboisement—such as successfully reclaiming one hundred and forty thousand acres of sand-dunes in Holland; or the million and a half of acres in the lands of France, once only pestilential swamps, but now covered with maritime pine; or the quarter of a million of acres of dunes in southwestern France, once gleaming sand, but now a huge forest. He may not understand, as I do not, electrical phenomena, and their modification by woodland. But he *does* know that in all history the plainsmen have sooner or later been subject to the mountaineers; that those who stripped the East of its timber fell into ignominious oblivion; and that out of the German forests came the Teutonic children—for they were nothing but children—who shattered the empire and legions of Rome, and made the civilization of to-day both a possibility and a most marvelous fact!

* Presented by request.

If what I wish to say were to be in the form of a stately discourse needing a text, I should speak from the words of Humboldt: "Men in all lands and climates seem determined to bring upon future generations two calamities at once—a want of fuel and a scarcity of water." Or I should select a paragraph from Champollion, who in writing of the great Sabasa said: "The hand of man produced this desert and every other desert on the face of this earth." Or I would use a beautiful figure which I once heard: "Earth was an Eden once—our sins against the world of plants have brought on us all our misery; the burning sun of the desert is the flaming sword between us and Paradise." Even believing with myself that these are extreme statements, you cannot doubt the general character of this paper; nor the position which I occupy in respect to this great question, so fraught with interest to us all, so terrible in the penalties which are threatened either ignorance or indolence.

What, then, is the theory of the relations of the forest to moisture? What is the practical value of timber, aside from the market value in actual use?

There are certain general conditions of all soils in relation to moisture. First, there is the impervious soil, off which water runs about as readily as though it were the best canvas or rubber cloth. Such are heavy clays, and very much of Western prairie until it is broken—though in this case the water is turned by the closely-woven sod-fibers, rather than by any quality of the soil itself. Then there is the pervious soil with impervious subsoil—sandy loam, with underlying clay. In this case the water is at once taken up by the soil, but is held by the subsoil, forming pocket sloughs, "wet spots," as our farmers call them, swales, and even the larger swamp or morass. Again, we have soils that are pervious throughout, with almost no power of retaining moisture—so little, in fact, that every time it sprinkles here the Chinese have to put on rubbers!—this washes down off a hillside almost as readily as the water itself. It is perfectly evident that neither of these soils of themselves can be considered desirable factors in the well-being of any country. In the case of the first, we have moisture unequally distributed; falling in torrents, only to rush away in torrents, bringing destruction and death as it comes, and leaving an arid country, a baked and baking desert, after it has all-too-speedily gone. The second breeds malaria everywhere, poisons both food and drink with its stagnancy, and is the parent of fever and pestilence. The third has no pledge for the husbandman, and is as uncertain and fickle as the sand of the shifting desert.

Now what can timber do for such soils? And in what way? We may answer from either of two standpoints: from an investigation of the character, extent and services either of roots or of branches.

Regarding the first, roots, it is certainly unnecessary to remind this audience of their extent, their wonderful ramifications. If in the somewhat famous squash investigation, a single vine was found to have roots which aggregated fifteen miles in length, what must be true of those of the maple or of the elm? Any one who has gone through the annual misery of taking up the kitchen drain, only to find it stopped with dense masses of roots from the neighboring apple-tree, will doubtless be willing to assent to the statement that it has no less than five hundred miles of fibrous feeders. I don't really know about the truth of this—but I do know about the drain! And if it is not quite five hundred miles it comes dangerously near it! However that may be, a very little thought will assure you that these roots accomplish a great work and a very beneficial work in all soils.

In the impervious soils they create natural water-ways; channels by which moisture is carried to great depths, and extended over large areas. With a force that is simply resistless they permeate every cubic foot of ground, almost every cubic inch,—piercing it in ten thousand directions, conducting moisture to points almost as destitute of it heretofore as is the center of solid rock. This forces a

process of disintegration more sure and more lasting than anything man has ever yet dreamed of accomplishing. This process is true, also, to a greater or less extent, of the impervious subsoils—though the benefit depends largely on the depth of the pervious soil and its sustaining power.

In the pervious soils, roots form a net-work of obstructions to erosion, holding the moisture in check, forming a sort of anchorage for the soil itself, and detaining either natural or artificial fertilizers till they have done their work. No one ever knew a timber-lot to wash over to another man's farm; but it is not at all a rare occurrence, especially in a hill country destitute of woodland, to find one's cornfield of the previous night spread like a giant plaster all over a neighbor's meadow.

Now what can be done for the soils by the leaves and branches? First—and I follow the order which presents itself to the unscientific observer, the farmer himself, for example—the leaves and other refuse from the tree form a dense packing, a mass of decaying vegetable matter, which both protects and stimulates all natural forces and qualities of the earth. Acting like a huge sponge, it takes up quantities of moisture and holds it in direct contact with impervious soils, softening them, hastening the process of disintegration already begun by the roots, and detaining rainfall that would otherwise drain away before it could follow the roots to their fibrous tips. Further, both this packing and the leaves still on the trees, modify the effect of the sun's rays in summer, while the dead mass is a great protection against the rigors of more inclement seasons. The result is highly beneficial, and is almost enough in and of itself to change the nature of the soil.

In the case of pervious soils, the effect of shade in summer and of warmth in winter is as marked as under the conditions first mentioned—while even more than in impervious soil does the dead mass tend to enrich and give firmness and consistency to what was before of somewhat doubtful value; even when not, as in the huge sand dunes which have been so successfully treated, a mere desert waste.

Further, and it is no small gain, both leaves and branches protect the soil from the violence of storms. The weight of falling water is greater than most of us imagine, and the impact of driven water, as in what we very aptly call "a driving storm," is still more forcible. It is well known that with some soils the effect of a hard rain is to make the surface even more impervious. Light soils, even when not washed away, are badly broken up, and all vegetation more or less injured—being uprooted by the recurring strokes or slashes of the columns of moisture. But when these swift-recurring blows are broken by trunk and branch and leaf, the damage, if any, is very slight, and generally such as will repair itself in a few hours at farthest.

It is largely through this work on the different soils that the forests do so much for man. The general effect on climate is very marked. Not only is moisture retained below, but the upper air is filled with that which has been taken up by the roots, and thrown out through the leaves by evaporation. This process, like all others in nature, is perfect in its methods and results. A very practical proof exists in the factory of the *Williamson Thread Company*. A certain degree of moisture in the atmosphere is desirable. Dampening the "buzz" of cotton or linen "just right"—a very indefinable degree!—makes a given quality of thread with some twenty per cent. less revolutions of the spindle than will accomplish the same results in dry air. The company tried many methods to bring about this result, without success. The floors were dampened, large dishes of water were ranged round the rooms, cloths wrung out in water were hung against the walls—but all to no purpose. Finally, a bright-witted fellow filled the window-seats with plants—and the work was done!

The general temperature is rendered more equal. Trees in and of themselves temper both heat and cold. I will not weary you with the details or statistics of ex-

periments in this direction; but it has been proved that when placed near a tree, a thermometer shows a lower range of the mercury in summer and a higher range in winter than if the exposure had been in open field. Every one knows how gratefully cool the recesses of a forest always seem in summer-time; and nearly everyone knows that men work with perfect comfort for hours among timber in mid-winter weather so cold as to make exposure in an open field even dangerous. There can be no doubt of the fact that this influence extends outside the timber-belt as well as within it.

The general effect on climate, though somewhat complex and not yet fully understood, is shown in another way. The western continent is cooler than the eastern, along the same latitudes. It is hard for us to remember that Philadelphia, Madrid, Athens and Constantinople are substantially on the same line; or that the same is true of St. Petersburg, Stockholm, the most northern and inhospitable point of Labrador, and the Alaskan peninsula; that the latitude of New Orleans and Mobile is that of Cairo and Delhi. Making all due allowances for the effects of that rather unknown quantity, the gulf stream, unquestionably the differences in favor of our continent are largely due to the absence of great central deserts, with their arid and shifting sands, across which flow air-currents hot as furnace-blasts—their burning breath penetrating even remote tropics. Something of the same phenomenon can be detected in following the isothermal lines within the United States. If you will trace their course on a map of the entire Union, you will find that they bend and twist in a way that closely follows the lines of the great timber-belts still remaining within our domain. I can only make this suggestion, leaving you to study either geographical or isothermal charts; over which a most interesting and a most profitable hour may be spent by even the most “unscientific” citizen.

Trees, too, are the natural home—really the only home—of birds, are the farmer's chief friend, all grumbling to the contrary notwithstanding. It is scarcely questioned now that in an open country insects which are elsewhere picked up by our feathered constabulary, seem to flourish most destructively. The case of Birds vs. Worms has not yet been finally decided; but there is little doubt that the verdict will be on the whole in favor of birds; and that insects, like the Chinese and other offensive partisans, must go. Woodland is needed, to enforce the decree.

The great question, however is, “What can forests do for man in the way of affecting the water supply?” In a certain sense, all else, though important, is subordinate to this. Without springs, small streams and rivers, a country becomes uninhabitable. Man may artificially accomplish much in the directions already named, without the help of timber. Soil may be broken by the plowshare and pulverized by the harrow, and perhaps superficially even more effectually than by the spreading roots of trees. Artificial fertilizers may take the place of more natural processes. Walls and embankments may protect hillsides from too rapid erosion. Shelter for stock may be provided—is provided—in many ways aside from timber-belts. Insects may be fought without the help of birds. But man cannot water the earth. Even when Nature lends him a helping hand, the process which he somewhat grandly calls irrigation is unsatisfactory, costly, and unreliable. Outside of this, he can do almost nothing. What a clear picture of this helplessness Starr King has given us:

“Just think how much expenditure of mechanical strength is necessary to water a city in the hot summer months. What pumping and tugging, and wearisome trudging of horses, with the great sprinklers, over the tedious payment. But see with what beautiful and noiseless force Nature waters the cities! The sun looks steadily on the ocean, and its beams lift lakes of water into the air, tossing it up thousands of feet with their delicate fingers, and carefully picking every grain

of salt from it before they let it go. The soft outlines of the clouds hem in the vast weight of the upper tides that are to cool the globe, and the winds harness themselves as steeds to these silken caldrons, and hurry them along through space, while they disburse their rivers of moisture from their great height so lightly that seldom a violet is crushed by the rudeness with which the stream descends."

What then can the forest do for man in this matter?

In the first place, it cannot be repeated too often that the forest is a great storehouse of moisture. The refuse, which I have already mentioned, becomes saturated, and aside from what it thus retains it is, in connection with the living foliage, a perfect protection against too rapid evaporation. The phenomenon of a hard rain on the mountains with no perceptible rise in either springs or brooks, and that other phenomenon of a prolonged drouth with no perceptible diminution in the quantity of outflowing water, are constantly recurring, and have this explanation. Leaf and bark must first be saturated. Then the moisture falls gently down on the sponge-like mass at the roots. This is filled. Then with the ground beneath permeated with roots, and softened by the upper deposit, the rainfall is gathered deep in the very heart of the hillside, to find its way out, slow and clear and cool, through the openings that both man and beast know so well. These are fed by accumulations that would be almost impossible and unknown but for the forest, and the process just briefly described. And these accumulations are essential to the welfare, even to the existence, of man. Neither the accumulation nor the distribution can possibly be accomplished in any other way. The proof lies in the fact that where forests wane, all the conditions of life change for the worse; and where forests are wanting, life rapidly degenerates into mere existence.

Do you ask for examples or proofs? They are so many and so striking that one only hesitates as to the choice. The Euphrates once ran bank-full, with constant overflow, fed by the springs and streams of the American forest. That forest has disappeared, and the mighty river has dwindled to a slender thread that is almost lost in the sands of its own bottom. Its banks are lined with a jungle of stunted growth, and the interior of the great geographical basin is destitute of either animal or vegetable life. The river Scamander, which was navigable in Pliny's time, cannot be found at all; nor can the great cedar forests which then covered Mount Ida—the source of the stream. The people of Dubaté, in New Granada, have for years witnessed the steady subsidence of two lakes near the city, as the timber which economized and regulated the streams that fed these basins have been removed. Several bodies of water in the same vicinity, and existing under almost precisely similar conditions except that of deforestation, show no change in their volume. Even more striking has been the experience of Nueva Valencia, in Venezuela. This city was founded in 1555, about a mile and a half from the shores of Lake Tacarigua. The greed of man made haste and waste with the surrounding forests, and when Humboldt visited the city, in 1799, the lake shore was nearly four miles away. A friend who spent the fall of 1866 in Venezuela told me that under the influence of second-growth timber the waters had again approached the town, though they had not reached the old lines. Careful experiments show that there is not nearly as great a volume of water in either the Oder or the Elbe as before the great tracts of timber about their sources had been so thoroughly cut over. There is also in the case of these rivers that other sure sign of deforestation—a sudden rise and fall after heavy storms, with disastrous results; something of which we can find almost no record in an earlier day. It is a well-known historical fact that the Romans gave to Orleans a bountiful supply of water, conducted from the fountain of Etruvée; but the fountain cannot be found to-day, and nearly all the streams on that side of the city have dried up entirely, or have but a slight flow during a fraction of the year. The forest has been almost entirely removed! But on the other side of Orleans, where there has been

almost no clearing, the streams are as they have been from time immemorial. The Durance, a river of France, had for many years been a constant menace to all who lived along its banks, or even within its basin. Its rising was swift and disastrous, and it came to be known as the most dangerous river in the realm. But when the government began to give attention to forestry, the chief timber plantations were formed round the head of the Durance. Soon the stream began to lose its frightful character, and even in the summer of 1875, when so much suffering was caused by floods, the river gave little cause for anxiety; nor has it even threatened danger since. The island of Mauritius, to which reference has already been made, was once a mass of verdure, filled with springs and brooks and large streams. Later it was cleared, and laid out in large sugar plantations. The streams at once began to shrink, the springs dried up, and it was soon difficult to obtain good drinking water at all. For thirty years it was swept by frightful epidemics, thirty thousand inhabitants dying in a single season. After a rain the small streams became terribly swollen, and carried devastation and death throughout the island. Partly through neglect and partly by deliberate intention, large tracts of land were allowed to return to their original condition; and already the beneficent effects of the second growth have been seen in a decided mitigation of all the evils referred to. Ascension Island was once barren, and no ingenuity could discover water sufficient even for the garrison; the supply was brought from Good Hope, and every drop was precious. But tree-planting was a necessity for the sake of shade; and tree-planting has secured an ample supply of good water in this formerly desert spot.

Such illustrations might be multiplied indefinitely. Permit me to add one more, and that because of its simplicity, and because it undoubtedly represents the experience of many in this hall. The old hillside farm in Vermont, on which I received what often seems to be the best part of my education, was noted for its delicious and abundant water. It was bounded on the east by the Battenkill river; a stream navigable for a canoe-load of two—to my certain knowledge!—and in which even seven or eight could be safely carried under pressure—not just the same kind of pressure!—without danger of sandbars or similar obstructions. It was not one of those amphibious streams in which the bottom frequently comes up to the top to breathe! Skirting the foot of the hills was a line of springs, known to all the country round. There was the large "Orchard spring" just south of the highway. Near the bridge was "Cold spring," and within a hundred feet distance "Trout spring" and "Middle spring" sent out waters that could be dipped with a pail without "rilin'." A hundred rods further north was the "Stock spring," where cattle, horses and sheep were driven all winter long. Down the south side of the farm ran "Chestnut-hollow brook." Along the roadside was a small trout-stream, delighting both eye and ear—aye, and nostril as well, with the delicate odor of mint. Down through the center of the estate came "Mill brook," which never failed us—leaping to the wheel of industry with a song day after day, in heat or cold. On the hillside, in the pastures, were springs so numerous that they were never named. During this last summer I went all over this ground again—as not before in almost thirty years. The river had dwindled away almost beyond recognition. The springs were either dry, or but shallow pools of tepid water. The wayside brook had disappeared. The mill was idle, nor could it find power more than five months in the year. The pastures were dry and brown. And the cause was perfectly plain. The mountain had been sold to charcoal-burners, who had stripped it of its verdure. The moist and sponge-like mass which had been my delight in many a summer's ramble had dried up, had been burned up, or had literally blown away. The moist and porous earth had become hard and seamed like rock. Erosion had laid bare large ledges of stone. Ravines had been deepened, and huge patches of sand and gravel here and there in the meadows once

watered by the brooks, showed only one of the disastrous effects of sudden rise and mad overflow. Had I never heard a word nor read a line of this discussion, there could have been but one deduction from the facts thus painfully before me!—deforestation was doing its sure and never-failing work.

Whether depopulation is the necessary result of deforestation cannot perhaps be determined. Such great changes are rarely wrought by a single factor. But that deforestation and depopulation have gone hand in hand cannot be questioned. Think of the mighty peoples once filling to overflow the vast plains of central Asia Minor. These are now trackless—desolate. Recall the great cities: Babylon with its palaces and hanging gardens; Ispahan, even in the seventeenth century twenty-four miles in circumference, with a hundred and sixty mosques, forty-eight colleges, eighteen hundred grand caravansaries, nearly three hundred public baths, and its streets thronging with nearly six hundred thousand souls; Bagdad the beautiful and the mighty;—what are they now? Greece has but one-twentieth of the population that once lived contentedly on her soil. As late as the year 670 what is now Tripoli had a population of six millions, of which less than three-fourths of one per cent. remain. Spain retains but seven per cent. of her grand forests; and from Gibraltar to the Tagus maintains but one-tenth of her former population. So marked and so swift have been the results of deforestation in the old Castilian monarchy, that Rentsch, the German historian, says "the political decadence of Spain is largely due to the destruction of the forests." Without further illustration, it is sufficient to remark that the physical and climatic influence of forests and the importance of all due protection to woodland have stirred to vigorous activity nearly every civilized government on earth. And we sit still with folded hands, justifying our conduct by quoting as a truth the scornful remark of the old French abbé: "There is a sort of special providence that watches over little children, old women, and the people of the United States of America!"

For what are we doing to-day? Stripping the country of timber in every direction, with a recklessness and a wastefulness of methods and an utter indifference to either the teachings of the past or the known wants of the future that seem madness. Not content with satisfying our own demands, we are exporting large quantities of lumber which should remain on the stump. Farmers clear more land than they can cultivate, in the face of a wealth of open public domain. We burn and trample down and otherwise destroy thousands of acres of vigorous shoots every year. Private estates are wasted; public lands are robbed. The Northern States are said to have about twelve years' supply of timber at the present rate of cutting. When the same pressure and exhaustive processes are brought to bear on the South, the forests of that section are doomed in seventeen years. An equivalent of fifty thousand acres of the best Wisconsin timber-land is cut every year to supply Nebraska and Kansas alone. Ohio has not a merchantable walnut tree in the State, and one of her Governors officially announces that two hundred years will scarcely make good the ravages of the last half-century. The forest crop of the United States for 1880 was estimated as almost entirely denuding not less than ten millions of acres. Wood is used for fuel where we should use coal; for shoe-pegs, where we should use metal; for fences, where we should herd or soil our cattle, (the fences in Ohio have been said by competent authority to be worth more than all the cattle); for telegraph and telephone poles, when the wires should be under ground; for city walks, where we should use brick or stone or asphalt; as pulp in paper, thereby giving us cheapness at the expense of both durability and comfort; for railroad fencing, at a cost of about eight hundred dollars a mile, only to be buried in winter and burned in summer—when a live fence would cost far less and do far better work. In these and in a hundred other ways, all avoidable and most of them inexcusable, we waste our substance. A clever statistician has estimated that when our inheritance has been exhausted, the merchant marine of the world

could not carry us lumber as fast as we now use it. This, too, remember, is at the close of the first century of our national existence; when we have a population of but about sixteen to the square mile. What will be our condition at the close of the next century if this recklessness continues?

What shall we do about it? The land of this country is largely in private hands. It will soon be entirely so. Our public domain is shrinking with marvellous rapidity. Perhaps it is already true that whatever is done in the way of timber-culture must be done by the owners of the soil. We are very slow to extend the powers and duties of either the National Government or that of the State. We naturally and properly dread multiplying either national or state officers. But there are some things which we *can* do as individuals, and some things which we *must* do through the State.

As to the first, I have already noted many ways in which we may be more frugal, and keep something in store for that day of greater emergency which is sure to come. There are certain other directions in which we may move without waiting for the action of the civil authorities. I mention these in no special order, as they have no logical connection; but as they have been jotted down from time to time during the years in which this topic has urged itself on my attention.

A double or triple row of trees can be grown around a farm with scarcely any loss of land, and at very small expense. Such rows could also be set across a farm in each direction—possibly so as to inclose say each twenty or forty acres. I do not propose to discuss the money value of such timber-belts, either to the farm or in the lumber market. My only purpose is to call your attention to the fact that there are dollars and dollars in timber that is not intended for the lumber market. A wind-break always means a great deal; and once in a while, yes, *twice* in a while, means everything. Nor should we forget, even under somewhat more favorable circumstances, the effects of a *drying* wind. It is a well-attested fact that evaporation under such air-currents often proceeds even more rapidly than under the rays of a midsummer's sun. Roads pass from mud to dust in a single day, and the soil of fields disintegrates till it is like the sand of the desert. A forest renders such a condition almost impossible; and a stiff wind-break will go very far towards mitigating the evil. Nor is the shelter of stock to be overlooked. Careful comparisons show that stock that is kept in the open field does not take 'on flesh nor growth as rapidly as that which is provided even with a slight natural shelter. There is every inducement, therefore, for the planting of such hedge-rows.

Second. Much land that is now called waste land might very profitably and at very slight expense be given to timber. When one remembers that for forest purposes at least three hundred trees can be grown on an acre, one can easily see the possible results of time and patience. The Mennonites of Kansas are said to secure all their fire-wood by simply thinning their forests after seven years' growth. Ten acres would certainly pay a good interest on the cost of the land, and the taxes besides—saying nothing of the benefit to the farm in other ways.

Third. Much land now overrun by cattle and not yielding twenty-five dollars a year in actual pasturage, would become valuable if simply let alone. The damage caused by cattle is almost incalculable. In and near a timber lot they trample out and browse out that which if left to itself would soon be worth many times their value. I don't believe it pays to browse anything—but a boy! Acres and acres have been redeemed by this letting-alone process, and to-day are thick with timber.

Fourth. More intelligence can be shown in cutting timber. There is such a thing as a timber crop, just as there is a wheat crop. Maine is an excellent example of what can be done in this way. Maine without timber is Hamlet with Hamlet left out! A few years ago the people became aroused to a sense of their

loss and danger arising from deforestation, and a healthy public sentiment and renewed discussion and investigation have gone far towards remedying the evil. Trees are selected with care, are felled with the saw rather than with the axe, are cut close to the ground, are so felled as to do the least possible damage to the surrounding trees, and are cut in such numbers and on such ground as will best promote the growth of the timber which remains. There is such an expression in a lumberman's vocabulary as "full growth"—and as far as possible no trees are cut till this has been reached. As examples of other experiments in this direction, might be quoted among many others quite as noteworthy, the royal forests of England and the large tract of Scotch fir in Strathspey, Scotland, belonging to the Earl of Seafield. The timber lands of the crown include about one hundred and twenty-five thousand acres, watched with the greatest care, though at much less expense than would generally be imagined, and yielding an annual cut worth about one hundred and seventy thousand dollars, with no perceptible diminution. The Seafield tract is so used as to permit the cutting of a thousand acres annually, on a rotation of sixty years. The annual repair is thought to fully equal the annual waste.

Fifth. A very little labor each year in removing tops and broken branches, and in clearing underbrush, goes a long way towards the prevention of extensive fires, and in the direction of stimulating growth. I have in mind just now a New England farmer who is a born woodsman, who has loved his forest since childhood, and who rarely goes through it except with axe in hand—to be used much as a gardener uses his shears. To-day he can tell you of whole "cuts" which are now possible only because of his watchful care; and he pats his trees and talks about them as though they were his children. As a result, his timber-lots are huge parks of most beautiful and valuable trees—while his neighbors' lands have been allowed to become thickets and impassable jungles of stunted growth.

What can the State do without increasing the number of its officials? How can it stimulate tree-planting by its citizens?

First, educationally. There should be required and established at educational institutions courses of lectures on this special topic; a continual insistence on the vital importance of an intelligent perception of our danger, our needs, and of the possible remedies. I am prepared to go further, and say that at the institution of which this community, this State, is so proud, and which touches the every-day life of our citizens so constantly and in such a practical way, there should be an experimental station with a department of forestry, the head of which should be *ex officio* the State Forester; the burden of his duties being a close examination of the timber conditions of Ohio and the possibilities of the State in this direction, with wise suggestions as to either staying waste or increasing our woodland area. From such department should be issued frequent reports, to be scattered broadcast through the State, giving the results of the very latest investigations here and elsewhere. The Forester should also prepare a careful statement to accompany all reports issued by the State Board of Agriculture; and should be granted, as he undoubtedly would be, a very free use of the press of the State. Teachers in the common schools should be required to present the topic to pupils at least once each year.

Again, the State may very properly encourage tree-planting by certain exemptions from taxation. For every acre set to trees in which the settings are not more than twelve feet apart, and are kept in good condition, Iowa exempts the sum of one hundred dollars from taxation for ten years after the trees are planted. Michigan instructs each highway commissioner to require the planting of at least fifty roadside trees each year till his district is all set; and allows for each tree twenty-five cents on the road tax of the one planting—though the total allow-

ance must not exceed in any one year one-fourth of the entire tax. The trees are not to be more than sixty feet apart, nor less than twenty-three feet nor more than twenty-five feet from the center of the highway. Connecticut provides that plantations of specified trees not less than twelve hundred to the acre [it is to be noted that this is the way that timber starts naturally—in masses] and of an average height of six feet, may be exempt from taxation for ten years from date of notice and application. Dakota exempts from taxation for ten years any quarter-section with all improvements—the entire exemption not to exceed one thousand dollars—on which there are five acres of timber planted and in good growing order and well cultivated. Nevada grants a bounty of ten dollars an acre, and ten dollars for every half-mile of roadside trees, for each of twenty years; provided there is successful cultivation and growth. Rhode Island adopts substantially the statute of Connecticut. Wyoming exempts two hundred dollars per acre for five years. Some difficulty has been experienced in securing honest work under these and similar laws; but the general results are on the whole favorable. They are certainly such as to encourage experiments in this direction. The laws just referred to have not accomplished all that has been hoped. But all failure has back of it the fact that we have not yet a realizing sense of our danger. Hence I put education as the very first condition of change. A healthy public sentiment can accomplish almost anything in this country—and almost nothing can be done without it.

The State can move also in the direction of swift and sure punishment for either negligence or malice in starting forest fires, or those that become forest fires; in such protection to wild land as will insure the natural growth of trees; and in the passage and sharp enforcement of such laws as will protect roadside trees from damage by stock running at large. In this matter it is about time to realize that roads are granted for public use for purposes of passing and repassing only; and by no stretch of either common law, common sense, or common decency, can one acquire a right of pasturage in the highway!

You will see that I have left very little for the General Government. I confess I do not see how it can do much more than has already been suggested. It has already legislated again and again for the protection of its remaining timber-land. What is needed is administrative ability and integrity to make this legislation good. I doubt very much if there should be a National Bureau of Forestry. We are in constant danger of becoming a huge bureau-cratic government, with a constantly-lessening sense of individual responsibility. If we had a dozen bureaus, we could not enter the premises of an individual citizen, and compel him to either cultivate or to refrain from waste. It is hardly needed in the way of general advice; as forestry, at least, is a "local issue." We can determine in Ohio what can best be done by Ohio for Ohio. If we do so determine, action on the part of the General Government is unnecessary; if we do not so determine, be sure that such action will be fruitless. The Department of Agriculture might very properly have advisory powers, and might use its printing and mailing facilities with excellent educational effect. It is very doubtful whether it ought to do more—whether it could do more.

No; the care of the forest, the rehabilitation of our soil, the restoration of that of which nature has been thoughtlessly or wilfully robbed—this must ever remain with us largely a matter of individual conscience, and for individual action. All possessions are in the nature of trusts; none more so than that of land and woodland—the two great conditions-precendent of existence itself. He who exhausts the soil, curses his posterity; he who unnecessarily destroys a single tree, does his part toward making the earth a desert. The problem of storing, regulating and distributing moisture is one of the most important demanding solution. Only by wise and united action—action characterized by large aims and great unselfishness—can we hope to succeed.

Mr. T. R. Smith: I would like to say a word upon this subject. I was very much interested in the doctor's address. He told us that he had no practical knowledge, it was all theoretical, and we all coincided in that before he had finished. He speaks of the timber crops upon the hill-sides. It has been my fortune the last few weeks to go through the State of Massachusetts, upon those hillsides that were stripped of their timber. I have inquired as to the value of these timber crops, and the best and most reliable information I can get is that, after the timber is once cut off, if you will wait from seventeen to thirty years you can get another crop that will bring from fifteen dollars to twenty dollars an acre. The timber crop upon these hills in Massachusetts is not worth a dollar an acre. In our land it would not pay the taxes. Now, I have tried somewhat to protect timber upon my farm. It is not worth by fifty per cent. to-day as much as it was twenty-five years ago. I can remember when my father used to sell wood that was worth from three dollars and fifty cents to four dollars and fifty cents per cord, and to-day it is worth from two dollars to three dollars. I confess to you that the dollar is what the average American farmer is after, and my timber land now would be worth double to me for pasturage or cultivation or meadow what it is in woodland. It has no value to me particularly. That is the way I see it. It is a beauty. I like to look upon my trees, but that does not pay my taxes nor support my family, and I confess to you that I am one of those "pirates" who are destroying the timber. I am giving it to the poor people, and I think I am doing some good by supplying people with fire wood.

Now, in regard to fences, the doctor hinted upon that. I want to say to this audience that in my travels over the state I find in a great many localities and counties people are dispensing with their fences almost entirely along the roadsides and cultivated fields, and it is very satisfactory. There is no need of any kind of a fence along the road for a field you are cultivating. Of course, if you are pasturing it, you need a fence. I am sorry the doctor went out, I wanted to ask him a question. Of course, I admit that the forests are great conservators of moisture and a great protection, and influence climate, but the forests have got to go. The only way in my judgment to protect the forests is to exempt all woodland from taxation.

Mr. Derthick: I desire to make a motion, which is timely in connection with Dr. Canfield's presence here. It is well understood that to-morrow afternoon we go to the university to hold our meeting there, and after some consultation with some members of the faculty, I want to make a motion with reference to that, and that is, that we meet there at half past one o'clock, that those who care to, may make a tour of the plant and see the dairy and the laboratory, etc., and devote an hour to that, and that the session there begin at half past two, and then proceed without interruption, at the close of which, there is to be a banquet. That will

give those who desire to see the plant a chance to get out there early and see it before the meeting, and those gentlemen who care to, can take advantage of the later hour of half past two.

Motion unanimously adopted.

President Agee: Now, we have two most excellent addresses yet this afternoon, and we will be compelled to limit the discussion to a certain extent. We will now listen to an address upon "Commercial Fertilizers—Sources of Ingredients—Present and Prospective," by Prof. N. W. Lord:

ADDRESS BY PROF. LORD.

The art of agriculture which lies at the foundation of civilized life, is apt to be under-rated by those whose experience has not led them into direct connection with it. That it is the most important of all arts, and that upon its more and more careful and scientific development the whole future of this and every other country depends, is however being now recognized to a greater degree than probably ever before; and all the governments of the world are spending annually large sums of money in fostering and developing this oldest of the industries of mankind. In the language of the prophet, "All a man's labor is for his mouth"; the complex machinery of our present social life when closely considered, is a confirmation of this somewhat dreary saying. The grain and the live-stock of the United States are the motives which build railroads, run blast furnaces, mine coal, and make possible the complex industries of to-day. It is to one aspect of this great organization that I wish to invite your attention. The *Commercial Fertilizer* is so potent a factor in modern agriculture that its discussion is often before you. The intelligent use of chemical manures is becoming in many places a simple necessity. Unfortunately there is much to be done in instructing the user as well as the maker of these articles, in order that the most benefit may be secured to the crop at the least expense to the farmer, and therefore to the community of which he is a part. The object of this paper is to bring before you a few of the points in regard to the nature and sources of these commercial fertilizers and the nature of the State fertilizer analysis, as a means of both protecting and informing the farmer.

In the first place, let us consider the need of commercial fertilizers. It is an old story that they furnish "plant food": but like many "old stories" we spend a lifetime in learning their full meaning. Why do we particularly need plant food in these latter days? To duly understand this matter, we must bear in mind that every plant contains and must contain certain substances which are found in various proportions in the earth. There must be ten of these present in all fertile soils. Careful examination has shown that of the substances which a plant must find in the soil and take up into itself to become a part of it, three of the most essential are found only in very small amounts. Now these small amounts are carefully preserved by nature; they are not lost when the plant dies and decays, but in the slow process of time, return to the soil. When the plant serves as food for the animal, they in turn become a part of the new organization, and eventually return to the soil as before. Hence a field would last forever—in fact would grow in fertility and resource as those skillful miners, the growing roots and the soil waters, opened up deeper and deeper, the rocky subsoil and brought its wealth into the surface layers, to be at once available.

The story of the changes in the soil has been read by the light of chemistry and its sister sciences until one is bewildered by the wonderful system and order which proceeds from season to season, making the gradual outcome of the farmer's work a fertile field.

But this work is rudely interrupted when the products of the farm are not consumed on it. Every grain of wheat, every pound of live-stock, every can of milk removed from the land, carries off a part of the farmer's wealth as surely as the coal train takes the coal from the mines; and the most fertile soil will in time lose the elements on which its value depends. The extent to which this goes on is worth considering. There were shipped last year from Chicago to points east of Ohio, by rail alone, one million twenty-nine thousand six hundred and eighty-two tons of grain, which contained about forty million pounds of nitrogen, ten million pounds of potash, and sixteen million pounds of phosphoric acid, the three elements most sparingly distributed in the average soil and most easily exhausted. To replace the drain on the soil by this single item of grain, would require about one hundred thousand tons of nitrate of soda, ten thousand tons of sulphate of potash and fifty-six thousand tons of average superphosphates.

The hay crop of Ohio, is given by the United States Census Report for 1890, as three million nine hundred and eighty-one thousand and seventy tons. If this was all removed from the fields and none of its valuable parts returned, it would mean the taking away of

123.	million pounds of nitrogen.
12.7	" " " potash.
19.	" " " phosphoric acid.

The wealth of the State is therefore surely drawn away by this process, and unless means are taken to replace it final sterility will result. Now the farm fertilizers represent the natural return to the soil of the elements taken from it by the crop, and while the waste of this material is of course as inexcusable, as it is unnecessary, still under the conditions of modern life there will remain a steady drain which must be replaced from other sources. This then is the first aspect of the subject, the maintenance of the original fertility of the soil, but there is another side of the question. Few soils contain the three elements, nitrogen, phosphoric acid and potash, in sufficiently rapidly available forms as to give the maximum yield, of any particular crop. Now when these materials are supplied to such a soil in amounts and in ways regulated by proper scientific knowledge of the crop requirements and the soil deficiencies and characteristics, the yield will often be greatly increased at once and without waiting for the slow process of natural development by tillage and time. Indeed it is from this point of view that the usual argument for the use of commercial fertilizers is derived. Too often the farmer is taught to regard the fertilizer merely as a medicine for sick land or a stimulant warranted to produce wonderful results, and applies it ignorantly and promiscuously to any crop and to any soil, and in the end obtains results which are quoted as showing that commercial fertilizers are of no value. However, the great and steady increase in the annual sale of commercial fertilizers in all the great countries of the world is a sufficient answer to this last conclusion, and serves to show that such failures are merely due to lack of intelligence and a true understanding of the developments of the art of agriculture as aided by science.

The sources to which the farmer must look for his nitrogen, phosphoric acid and potash, are of two distinct kinds and may be considered separately. In the first place he must use and develop to their utmost, all the means which nature provides for preserving and fully utilizing all the material already contained in the soil and for collecting all the natural fertility furnished by rain and sunshine.

Second—he must maintain the amount and renew the waste of the available forms of plant-food by the application of commercial fertilizers. The first source is of the most vital importance to correct agriculture. Nitrogen, one of the most expensive of the materials which have to be applied to the field, is a wonderful

element. It forms four-fifths of the air we breathe, and yet its nature is such that when in the free state, as it exists there, it becomes absolutely inert and all the resources of science and art, cannot turn this vast amount of atmospheric nitrogen into plant-food with a rapidity equal to agricultural demands. This difference is hard to understand, but is of first importance. Now by the slow process of nature, thunder-storms, natural decay, the cultivation of certain crops, like clover for example, and a few other agencies, this dead nitrogen of the air is very slowly and a little at a time turned into the living active nitrogen which feeds the growing plants. Chemically the change is shown to consist in the formation of nitric acid, ammonia and other compounds of nitrogen. The combined nitrogen can by the power of growing crops be preserved for the use of the farmer, and the soil itself has the property under certain conditions of storing it up for future use in forms in which it is little liable to loss or alteration. So from year to year a soil under proper cultivation may store up nitrogen from natural agencies and thus, if not robbed by the removing of the crops, grow in fertility. Under the influence of warm air and tillage this stored nitrogen in the soil is turned into immediately available forms supplying the growing plant with whatever it needs. After the harvest, reverse changes set in and the more available, and therefore more easily lost forms of the elements are carefully gathered by the crops of the soil and turned back again into the permanent and therefore less easily lost kind. Now blundering treatment may defeat this natural process as much as proper care may aid it, causing steady loss instead of gain of fertility—all of which shows that nitrogen must be most carefully guarded by intelligent and scientific agriculture as the natural sources can easily be made to save much of the expense of purchasing the costly element, the well known effects of clover being a common example. The phosphates and potash are not supplied continuously to the soil, as are the compounds of nitrogen, and the field once exhausted of them cannot reinforce itself, but most soils contain considerable stores of these elements in fixed and slowly available forms which gradually replace the losses of the more available kinds; neither is there such natural cause for loss except the removal of the crops; though drainage may transfer these materials from one point to another.

It is the second source of supply, the commercial fertilizer, however, with which we are most concerned. These alone can supply the drain of commerce and add fertility to non-fertile regions. Now commercial fertilizers are to be regarded merely as crude chemicals, containing nitrogen available for plant use, potash and phosphoric acid; these elements and these alone giving them value. Other things enter into the usefulness of a fertilizer—its mechanical condition, uniformity, rapidity of action, concentration, all of which are matters largely controlled by the processes of manufacture. But so far as the ultimate value to the crop is concerned, it depends solely on the percentages in an available condition of the three substances named. The crude materials from which they are derived, are of two general classes. First—those obtained indirectly as a refuse from farm products, particularly the slaughter-house products. Second—those obtained from mineral deposits. The first are principally sources of nitrogen and phosphoric acid and generally appear in commerce as what are called "ammoniates". The refuse from all the great packing houses is now utilized and returned to the farm with the greatest care. As an illustration it would be interesting to consider how this work is done at one of the largest Chicago concerns, having facilities for killing from seven to ten thousand cattle and fifteen thousand hogs a day. Every portion is utilized; much which was formerly considered mere offal, goes into the market for special uses other than fertilizers. The hoofs, horns and shin bones bring high prices and are shipped to Japan, France and other countries, and come back to us in these dainty ornaments, buttons, brush-handles and much of the material which is commonly considered shell and ivory. So that only that

which can bring no better prices, can be used for fertilizers. This consists of the blood, small bones and meat scrap, only such bone being included as is not fit for the manufacture of bone goods. A part of the bone is first used to make glue in the glue boiling works, but finally is turned into fertilizer. The blood is collected in large vats. It is then cooked, which separates it into a curd like cheese containing the desirable materials. This curd is then squeezed out in a large press. The damp cake from the press is broken up into small pieces and dried by steam heat in large cylinders provided with rotating stirrers, and when thoroughly dry is carried to the grinding house where it is converted into a fine dark colored powder, and is ready for bagging. It is estimated that about twenty thousand tons of this dried blood is annually produced by the packing houses of the country. It is one of the most valuable of the products, containing a high percentage of nitrogen in a very available form. The various offal products from the trimmings, consisting of some blood, scraps of bone, more or less fat, etc., are put into large tanks and cooked by steam, under twenty to twenty-five pounds pressure from six to eight hours. This preserves the material, facilitates the grinding and removes the oil and grease, which if left in the material would interfere with its availability in the soil. After the boiling, the mass is dumped into large tanks, allowed to settle, the grease skimmed off, the liquid drawn off and the solid material taken to the press, as in the case of blood. It is finally dried in the "Anderson dryers", and after grinding constitutes the tankage of the market. This material contains about eight per cent. of available nitrogen and from ten per cent. to twelve per cent. of phosphoric acid. Both the blood and the tankage when kept dry are not liable to decomposition and do not lose their strength on keeping. The amount annually produced is about sixty-five thousand tons. The liquid drawn off from the solid tankage has fertilizing value, and is boiled down till it becomes a thick mass. This could not be dried and ground alone, owing to its damp and sticky character, so at this stage, it is mixed with a little alum and copperas which makes it possible to dry it and grind it. This forms the concentrated tankage containing about fifteen per cent. of ammonia. The five thousand tons of this material produced annually represent the saving of something which was entirely wasted until quite recently. Bones are of course, among the most valuable products of the packing house. In addition to this supply, large amounts are brought from the Western plains, where they are gathered up and shipped east for grinding. The slaughter-house bone is carefully sorted and all those parts which can be used for the manufacture of bone articles are cut out by steam saws. This selected bone is far too valuable for fertilizing uses, selling from seventy-five dollars per ton upward, according to quality. The scrap bone, which goes to the fertilizer factory is treated in several ways. Bone meal represents the pure untreated bones, which for this product are merely put into boiling water for a short time to take out the grease, loosen all adhering meat and sinew and otherwise cleanse the surface, the chemical character of the bone itself being practically unaltered by the treatment. It is then dried by steam heat, crushed and ground to powder. The water in which it was treated, together with all meat scraps separated, goes to the manufacture of tankage as before. The material known as "steamed bone" is generally a product of the glue works. After crushing, the bone is cooked for many hours at a moderate temperature to extract the glue. After this thorough soaking much of the gelatine is taken out, leaving the mass more porous and brittle, but lower in nitrogen and higher in phosphoric acid. The following comparative analyses show the difference between the two.

Ground raw bone	4.75	to	5.	ammonia.
	22.	"	23.	phosphoric acid.
Ground steamed bone	3.2	to	3.5	ammonia.
	27.	"	28.	phosphoric acid.

The phosphoric acid in the steamed bone is, owing to its firmness, in a comparatively available condition. It is difficult to ascertain the total bone product of the country, but it is estimated that the packing houses turn out about forty thousand tons annually. Much of this material is shipped east from Chicago. The total shipments of fertilizers in 1895 from this city to points east of Pittsburg amounted to fifty-two thousand seven hundred and fifty-three tons. This represents the excess over the amount used by local consumers. We see then the extent of the packing house contribution to the fertilizing needs of the country, yet large as it appears to be it is but a drop in the bucket compared to the soil demands, if the annual losses are to be supplied to the ground. It has been shown before that the nitrogen taken from the soil and shipped from Chicago east in the form of wheat alone was forty million pounds, for the year 1895. The total amount of nitrogen represented by the slaughterhouse product of the country may be estimated as follows:

Blood 20,000 tons.....	3,400 tons nitrogen.
Tankage 65,000 tons.....	5,200 " "
Concentrated tankage 5,000 tons.....	750 " "
Bone products 43,000 tons.....	1,720 " "
Total.....	11,070 " "

This makes a little over twenty-two million pounds of nitrogen—a little over one half the amount carried east by the grain crop alone.

The need of further supply of nitrogenous fertilizers is leading chemists and manufacturers to seek to utilize all available sources, and all waste products are to-day carefully examined with a view to utilization of the nitrogen they contain. A partial list of some of the other sources of such fertilizers indirectly or directly obtained from agricultural products would include cotton and linseed meal, which are high in nitrogen and contain considerable potash, though very little phosphoric acid; leather scrap and wool waste which are extensive by-products in the east. The nitrogen contained in these substances is very slowly dissolved in the soil, and until satisfactory methods of treating them are discovered, by which the availability can be increased, they are poor materials for fertilizing purposes. Experiments in this direction, however, are continually being made and will probably finally make them of use. Fish scrap and azotin furnish a considerable amount of nitrogenous matter. It is clear that there must always be an insufficient quantity of these animal and vegetable fertilizers to supply the loss which the soil is continually suffering, as at the best they make but a partial return of what was taken away in the crops they represent. This leads us to the consideration of the great mineral deposits of fertilizing material, which are doing so much for the agriculture of the world. The use of guano or the sea fowl deposits found in certain islands, has been known for many years and until comparatively recent times represented the principal consumption of mineral or semi-mineral fertilizers, but within the last twenty years the discovery and utilization of the vast natural deposits of rock phosphate, Chili salt petre, or nitrate of soda, and the German potash salts has revolutionized and vastly extended the mineral fertilizer industry. The American phosphate beds are at present mined in four districts. The first and one of the most important, is the deposit of South Carolina which covers an area of about seventy miles in length by thirty in width, in the neighborhood of Charleston. The deposit consists of a layer of phosphate nodules or pebbles, varying from three to twenty feet in thickness and covered by later deposits of clay and sand. Only such portions of the deposit as are within fifteen feet of the surface are at present worked. The mining is done by cutting trenches through the phosphate deposit

and then working out in each side, filling the trench behind with the dirt taken from before, taking out, as the work proceeds, the layer of phosphate gravel which is then screened and washed free from dirt and sand with running water. The clean pebbles are composed of phosphoric acid, combined with lime, with an average of about 28 per cent of total phosphoric acid. There is another mode of obtaining the rock phosphate in South Carolina, furnishing the so-called river rock. The Coosaw River was for many years the chief source of this material, the water of the river, having accumulated the phosphate on its bottom as a heavy layer of gravel. This is dug up by steam dredges, screened and washed, and is then ready for drying and grinding. The Carolina phosphates were discovered about 1837, but it was not until 1867 that regular working began. From that time on, the production has rapidly increased. The average production of the field is according to Wyatt (probably the best authority on the subject) about seven hundred and fifty tons per acre of the land rock. The cost of the material at the mines, is probably not far from four dollars and twenty-five cents per ton, according to the same authority.

The next great deposit of phosphate rock on this continent is in Canada, in the provinces of Ontario and Quebec. The deposit is entirely different from that of South Carolina, consisting of a hard green, brown, or red rock known as apatite, and is found irregularly distributed in pockets, in great veins of a granite-like rock, which probably extend to great depths. These deposits were first worked in 1863, but only in a small way. About 1880, English capitalists introduced machinery and attempted the development on a large scale. According to Wyatt, there were in 1891, sixteen companies working in these deposits, with about four million dollars capital (aggregate). The rock as selected and ready for shipment, will run 88 per cent. phosphate of lime in the first grade and down to 66 per cent. in the lowest grade put on the market. The rock is estimated to cost eight dollars and sixty cents at the mine, and the product is almost entirely shipped to Europe.

The great excitement attending the opening of the extensive Florida phosphate deposits was so recent in occurrence, that all are familiar with this source of fertilizing material. That phosphate rock occurs in Florida has been known for many years, but the first attempt at its commercial mining did not occur until 1888, when the great extent of the deposits was revealed. A great excitement followed. Fabulous claims were made for the district and a great deal of money sunk in worthless ground. Still the existence of very large and valuable deposits of phosphate rock, was proved and extensive operations for its development inaugurated. The deposits include pebble rock, and phosphatic boulders, together with a soft, chalk-like phosphate, entirely different from that found in South Carolina. River rock is also worked and consists of a pebbly phosphate mixed with many fossil bones and teeth. The effect of this enormous development of cheap phosphate has been to lower the price of these materials very greatly, and largely cut down the product from South Carolina. The total production from the Florida mines for 1893 is estimated at three hundred thousand tons.

The most recent deposits found in this country however, are those in central and southern Tennessee. Large quantities of Tennessee phosphates have been shipped from Nashville, within the last year or so. The deposit consists of a layer of phosphate nodules overlying the shale and is apparently of very great extent.

It would seem, from what has gone before, that we have in this country a practically inexhaustible supply of these valuable rocks, and it but remains for the farmer to duly appreciate and properly employ them, in order that they may become a mine of wealth, to the whole community as well as to the owners and shippers. The mineral sources of potash are not so widely distributed. The potash salts of the world come from the salt mines near Stassfurt, Germany, where a

region extending from the Harz Mountains to the Elbe River in one direction, and from Magdeburg to Bernburg in another, is underlaid by great deposits of rock salt, aggregating, possibly, five thousand feet in thickness. This salt deposit is divided by a layer consisting of compounds of magnesia and potash with chlorine, sulphuric acid and lime; the total thickness of these potash layers varying from fifty to one hundred and fifty feet. The minerals from this layer reach the market under the names of kainit or crude chloride and sulphate of magnesia and potash,—muriate of potash and sulphate of potash; the sulphate of potash, however, representing the result of chemical treatment of the raw material from the mine. The principal product of the mines is kainit which contains about twelve per cent. to thirteen per cent. of potash and a great deal of common salt or sodium chloride. Since 1862 the Stassfurt potash salts have been a regular article of commerce and at present constitute practically the supply of the world. The mines are under the control of a syndicate, comprising all the large firms and fixing the price to all consumers. Less important sources of potash are found in the ashes of cotton seed hulls, in tobacco stems and in unleached wood ashes. Unfortunately the amount from these sources is too small to affect the prices maintained by the Kali syndicate.

The mineral ammoniates comprise practically only Chili saltpetre or nitrate of soda, of which nine hundred and ninety-two thousand one hundred and fifty tons were exported in 1894, of which between ten per cent. and fifteen per cent. came to the United States. This deposit has practically contributed to the nitrogen supply of the world only since 1878, in which year the exports amounted to seven hundred and forty-one tons.

The origin of these beds which occur in the sandy regions of the desert of Acatama is not thoroughly known but is probably in some way connected with the decay and oxidation of seaweed or other old marine deposits left there in past times.

In regard to future sources of fertilizer material it is obvious that the one most to be sought is nitrogen. The present entire dependence on the South American fields, is bound to lead to its exhaustion. A great and promising source of this valuable element is to be found in coal. The nitrogen in coal has for years been carefully collected by the gas works in the country and furnishes a large proportion of the ammonia salts of commerce; but in the great coal industries of the country—the manufacture of coke and the manufacture of iron—all of the nitrogen has been allowed heretofore to go to entire waste. Within recent years, improved processes introduced into these industries have made it possible to profitably collect this material and thus save annually, thousands of tons of this most valuable fertilizer. Coke works with the improved methods are now at work at Johnstown, Pennsylvania and Syracuse, New York. The coal used in Pennsylvania in the manufacture of coke will average ten million tons per year. The experience of the German works shows that twenty-five pounds of sulphate of ammonia can be obtained as a waste product from every ton of this coal, so that this source alone, should, and before long probably will, supply two hundred and fifty million pounds of this valuable salt to the market. The iron works of England, are now saving the ammonia escaping from the large blast furnaces using raw coal, and the amount so obtained is a large factor in the ammonia fertilizers of that country. The "phosphate slag" from the steel works is also becoming an important source of phosphoric acid, particularly in Germany. After this review of the extent of the business in commercial fertilizers, let me close by a few words in regard to the nature and necessity of the legal state fertilizer control, with which I am connected in Ohio. We have seen that commercial fertilizers are strictly crude chemicals, owing their value to small and variable percentages of potash, phosphoric acid and ammonia. Now the purchaser in this case has absolutely no means of as-

certaining the quality of the material he buys. He must rely exclusively on the statements of the seller. It is true of most articles in the market that the purchaser can judge of the quality, either by inspection or by use. In neither of these ways can the farmer tell about his fertilizer. Of course, he may wait and judge of the article by the effect on the growing crops, but his experience is gained at great loss to himself if the goods turn out inferior, and no recourse could be had on the manufacturer, as it would be difficult to prove that the failure was not due to improper use or improper selection of the goods. The only thing that can safely and certainly inform the farmer is an impartial analysis of the material he buys so made as to be removed from all suspicion of influence in the interest of any party. It is such an analysis that is given by the Secretary of the State Board of Agriculture in his Fertilizer Report. Every brand sold in the State, is at least once a year collected by the agents of the Secretary at points selected by him and of which the manufacturer has no previous information, carefully averaged samples of the material are prepared by the Secretary and sent to the chemist for analysis, the chemist being kept in entire ignorance of the name, the agent or the maker of the goods. The chemist receives the goods merely designated by a number. The analysis is then made and reported by the chemist to the Secretary of the Board of Agriculture. It would be entirely impossible for me as chemist making the analysis to tell the name, maker, or place of sampling, of any sample I analyze, before the report is in the hands of the Secretary. In doubtful cases, or wherever for any reason any question arises as to the accuracy of the analysis, the material is re-analyzed entirely at the request of the Secretary and the first results compared with the second to detect any possible errors. In this way the farmer is informed of the composition of the brands as found on the market, and the loss to the manufacturer both in reputation and money from the publication of an analysis which should show his goods to be below what he states them to be, would be so great, that he cannot afford to take the risk of sending even occasional lots of inferior goods into the State. In addition to furnishing the analysis, it has been the custom for some years to attach commercial valuations to these goods. The object of these valuations is simply to indicate to the farmer what the relative selling prices of the goods should be as calculated from the cost of the crude materials. It is impossible to secure entirely satisfactory results, but it is believed that as experience is gained the valuations affixed to the fertilizers will more and more closely correspond to the market values.

It is always necessary to keep prominently in mind that these values are commercial and not of necessity agricultural. Phosphoric acid, potash and ammonia are necessary in various degrees to various crops and various soils. All the commercial valuation attempts to do is to tell the farmer what he should pay for these materials. Whether he needs one or the other, he must judge for himself, and not assume that he needs the highest priced, merely because it is the highest priced—a mistake which would often be financially disastrous.

Mr. T. R. Smith: You say the only valuable ingredients in a commercial fertilizer are potash, phosphoric acid and nitrogen. Suppose I buy commercial fertilizer of any of the brands in the market, how much weight do I get of phosphoric acid and nitrogen in a ton.

Professor Lord: It depends entirely upon the source and composition of that fertilizer; you may get from nothing up to a very good fertilizer.

Mr. Smith: How much in weight do I get in a ton?

Professor Lord: Of course, this varies with the different brands. In the case of dried blood, you will get from fourteen per cent. to sixteen per cent. of ammonia. That is to say, you will get from two hundred and eighty to three hundred and twenty pounds of ammonia, which in nitrogen, would be equivalent to from two hundred and forty to two hundred and ninety pounds of actual nitrogen.

Mr. Smith: Please tell us what this sixteen hundred and eighty or seventeen hundred pounds is that we buy that is not either phosphoric acid, nitrogen or potash? (Great laughter.)

Professor Lord: Now, that is a very natural question to ask. When you buy maple syrup you get sugar and water. Now that water in the maple syrup bears very much the same relation to the syrup that these three materials bear to the commercial fertilizer, potash, phosphoric acid and nitrogen. The reason for its being in combination with other materials is that it can be handled.

Mr. Smith: The reason I asked this question is that I saw upon the track a carload of rock to be made into fertilizer, and it occurred to me then that it was very weighty, perhaps more weight than anything else.

The Professor: I presume there was more weight than anything else. (Great laughter.)

Mr. Derthick: I want to amend the motion I made at the opening of this session by changing the time to one o'clock instead of half past one, standard time, and we can come together at two o'clock promptly for the session. There are two or three important papers for discussion, and following that the banquet, and if we put it off until half past two, we cannot take it all in.

And thereupon, by vote, the time was changed from 1:30 to 1 o'clock, standard time, to assemble at the university.

The Chair: The next thing upon the program is an address upon "Food Adulteration in Its Relation to Health and Fraud," by Professor H. A. Weber, of the Ohio State University:

ADDRESS BY PROF. WEBER.

The wide-spread and nefarious practice of food adulteration, as is shown in the annual reports of the Dairy and Food Commissioner of this State; the baneful effects, which this uncalled for practice exerts upon the health, happiness, morals and welfare of the citizens of this great commonwealth; the importance of the existing laws on our statute books against this prevailing evil of food and drug contamination, and the danger of a modification of these laws, so as to make them practically inactive, and thus to take from the consumer the only means of protecting himself against the impositions of the sophisticator of human food and medicines, are among the reasons, which have prompted the writer to comply with the request to present a few facts on this subject.

The laws of our state regulate the sale of both food and drugs. It would be taxing your patience too much to consider both of these classes of commodities at this time. Suffice it to say in the case of drugs, that ample proof has been accumulated by the Dairy and Food Commission to show, that in dispensing medicines

a willful disregard of the health and life of suffering humanity, or at least a criminal negligence in the preparation and sale of remedial agents exists. Drugs have been purchased in various cities and towns of this state and subjected to analysis. Some, it is true, have been found pure and fully up to the standard, while other samples of the same kind of drugs contained only a fractional part of the active principle of the remedy or none at all. The evil resulting from the treatment of patients with remedies of such a varying composition must be apparent to all.

Before entering upon the discussion of our actual subject, it may be well to premise a few remarks on the nature of human food, in order that we may recognize more readily the relation, which the adulteration of food bears to the health of the consumer and to the raid upon his pocket book.

A complete food necessary to the promotion of life and health consists of four groups of nutrients, namely:

1. Carbohydrates, like sugar, starch, pectine, etc.
2. Protein, like albumen, gluten, flesh etc.
3. Fat, like vegetable oils, butter and other animal fats.
4. Mineral matter, like the ash of grain, fruit, meat, vegetables, etc.

For the sustenance of life these four groups of nutrients are of equal importance, i. e. if any one of the four is wanting in a food the other three will not support life. The first three groups can replace each other to a great extent, but the fourth group, the mineral matter, can not be replaced by any of the others.

The mineral constituents, therefore, are unique in this respect. At the same time they are usually considered of minor importance, because their proportion in our food is small and because they are not recognized by our senses. But from the fact, that they are purely nervous stimulants to the fully developed individual, causing the secretion of the digestive fluids and from the fact that no function of nutrition can exist without them, they must be accorded special consideration, when judging the quality of a food or beverage.

As adjuncts to our food we employ condiments and beverages.

Among the condiments the spices play a leading part. Although they contain the four groups of nutrients, which compose a perfect food and are especially rich in mineral constituents, yet the amount consumed with a meal is so small, that as food they dwindle into insignificance. They are, however, nervous stimulants causing, like the mineral constituents, a secretion of the digestive fluids. Besides their judicious use makes our food more palatable, gives it a certain relish, which also contributes favorably to the process of digestion.

The beverages, like tea, coffee, cocoa, fermented fruit juices and malt liquors are consumed in comparatively large quantities. When pure and used judiciously and with moderation, they contribute to good cheer, aid digestion and at the same time act as perfect foods.

In the act providing against the adulteration of foods and drugs the definition of the word, food, is, therefore, properly given as follows: "The term 'food', as used herein shall include all articles used for food or drink by man, whether simple, mixed or compound."

The first two provisions of the general law against adulterations, relating to food, read as follows: "Any article shall be deemed to be adulterated within the meaning of this act: 1. If any substance or substances have been mixed with it, so as to lower or depreciate, or injuriously affect its quality, strength, or purity. 2. If any inferior or cheaper substance or substances have been substituted wholly or in part for it."

These two provisions are so closely allied to each other, that for our purpose we can consider them together. The number of daily violations of these two provisions throughout our state, as has been shown by the results of the labor

of the Dairy and Food Commission, are simply legion. With the exception of a few staple articles like flour and sugar this practice of adulteration has invaded every line of prepared articles of food and drink. The wrong and harm, which consumers have been obliged to suffer on this account are incalculable. To give the evidence in detail, which has been accumulated, since the establishment of the Dairy and Food Commission in this state, to corroborate the truth of the statements just made, would not only far exceed the limits of this paper, but would fill a large volume. In this class of violations as well as in others to follow, we can only expect to take a glance at the condition of affairs as they exist or have existed in our midst.

The articles of food, which fall into the category of adulteration are those, whose physical properties will permit of their being manipulated or contaminated, without revealing the fact. In order to be salable at all they must conceal the ear-marks of inferiority, because otherwise the consumer could not be deceived in purchasing them.

One of the most generally used articles of food is milk. On account of the fact that it forms the almost exclusive food for young children, it is of the utmost importance, that it should be fresh and pure in order to promote healthful development. But unfortunately milk is peculiarly liable to adulteration, because of the ease with which the fraud can be accomplished. Milk is adulterated in a variety of ways, the most common methods being the addition of water and of skimmed milk. The proportion of water with which milk is adulterated depends largely upon the whim of the dealer. The writer has examined samples of milk, in which the adulteration by this means reached fifty to sixty per cent.; but ordinarily it is less. The addition of water to milk is usually regarded simply as a fraud perpetrated upon the consumer. The sanitary aspects of this practice do not receive that consideration, which they deserve. The reason for ignoring this phase of the question is due to the opinion, that water is harmless, and, therefore, the addition of a limited amount to milk, can not be inimical to the health of the consumer. This is all true, if the water added to milk is pure. But from the well known fact that water is liable to be impure and to contain the germs of contagious diseases, this dishonest practice becomes a serious crime against the community. It is a well established fact in sanitary science, that disease germs are disseminated through water, especially through surface water and sewage. Hence wells which are so constructed and located as to be contaminated with surface water or sewage are sure to contain disease germs, if an epidemic disease is prevalent in the neighborhood. The writer has had a wide experience in the examination of drinking water from all possible sources during his professional career. Wells located in barn-yards have uniformly been found to be absolutely filthy, although the physical properties of the water gave no indication of the fact. The same was found to be true of ordinary cistern water, which in popular opinion is regarded as the purest water in nature. Wells located near sewers or cesspools especially if the interevening soil is of a porous or gravelly nature usually furnish undoubted proof of direct sewage contamination. All waters of this kind are more than likely to contain pathogenic organisms. These organisms multiply with exceeding rapidity—when introduced into a suitable medium. Milk is a medium highly adapted to the promotion of the life and rapid development of these bacteria. It does not stand to reason, that a man, who wilfully adds water to the milk, which he distributes among his customers, will be over careful in selecting the water for this purpose. From this it will be seen, that milk contaminated with water is liable to swarm with pathogenic micro-organisms in a few hours after the contamination takes place, and further, that the use of such milk in the raw state might cause sickness and death, even when the water, with which it was adulterated, would not have had the same effect. A number of years ago the writer called attention

to the danger to public health resulting from this pernicious manner of making money out of nothing, and at the expense of the unsuspecting consumer. The opinion was based upon theoretical considerations alone; but through experiments subsequently made at our own State University and elsewhere, the truth of this theory has been fully corroborated. There can be very little doubt, that the ravages of death through cholera infantum or summer complaint, among the children of our towns and cities may in a great measure be ascribed to this cause. Other diseases like that of typhoid fever, which attacks older persons also, may be disseminated in the same manner. Hence from a sanitary point of view, the apparently innocent method of adulterating milk with water becomes a serious crime against the public, and the perpetrators of this fraud should receive the full penalty which the law allows, whenever they are caught in the act. Many people think that the strict enforcement of our pure food laws entails unwarranted hardship upon the producer and dealer; but the broken-hearted parents, who have lost the idol of their once happy home, and the widow struggling day and night to provide for a family of little ones, after the father and husband has been taken away, if they knew that their loss was due to the perfidy of those who furnished them with the necessities of life, would surely not share in this opinion.

The other method of adulterating milk by the addition of skimmed milk is open to the same criticism as just given in the case of water; but this practice becomes injurious to public health for another, less obscure reason. It is evident that the proportion of the various nutrients mentioned in the outset as comprising a perfect food, is about right in milk as furnished by nature; for it is the sole food for infants and young animals. The skimming of milk removes the fat almost completely, and hence the addition of skimmed milk to pure milk changes the relation of the nutrients as originally existing in pure milk. Pure milk itself varies between certain limits, but contains on an average about three and one-half per cent. of fat; the addition, therefore, of a small amount of skimmed milk would not only not be detected, but, other things being equal, would not seriously affect the food value of milk. But there is no money in adding small amounts of adulterants, and hence we find articles sold for pure milk, in which the amount of fat falls as low as two per cent., one per cent., yes, even as low as the fractional part of one per cent. To the full grown individual, who has partaken of a substantial meal, it matters not so much, if he imposed upon with a glass of this kind of milk. The nutrients contained in his full meal will counterbalance the deficiency of fat in the milk; but to the person, who is in the habit of eating a lunch of bread and milk alone, it makes a great difference, because he is not properly nourished, and to the infant, whose devoted mother goes to the dealer and purchases the only food, which it is able to take, it means sickness and death.

In order to show to what extent this important article of food is adulterated, it may be stated that in the early days of the food commission four samples of milk a day for several weeks in succession were collected indiscriminately from dealers in Columbus, and three out of every four were found to be adulterated. A few weeks ago four samples were analyzed, all of which were adulterated and one of which was practically skimmed milk.

Ground spices, on account of their physical properties, furnish a fruitful field for the labors of the enterprising sophisticator of human food. The substances, which have been identified as adulterants in spices and other condiments as sold in the State of Ohio are as follows:

1. *Mineral Matter*.—Gypsum, white clay, red ochre and sand.
2. *Refuse and other organic Matter*.—Cocoanut shells, roasted and green, mustard hulls, crackers, bread, rice hulls, rice flour, charcoal, tumeric, clove stems, sago, red and white, sawdust, cornmeal, cerealine, wheat bran, wheat flour, ground

olive stones, lentils, buckwheat flour, buckwheat hulls, roasted pease, millet seed, pea shells, pepper shells, linseed meal and cayenne pepper. The amount of adulteration with one or more of the kinds of mineral matter given, was found to vary from eight to twenty-five per cent. Taking all of the adulterants together either singly or in various combinations the extent of sophistication in some cases reached nearly one hundred per cent.

The mineral matters taken together are worth only a few dollars per ton, and with the exception of the ochre, which was found in samples of cinnamon and cayenne pepper to restore the color obliterated by the addition of adulterants, are added to increase the bulk and weight of the goods.

Of the organic materials, some will be seen to consist merely of waste products of no value whatever, for example, cocoanut shells, rice hulls, buckwheat hulls, olive stones, mustard hulls, etc.

The bread and crackers were undoubtedly derived from the stale articles, as they are collected from dealers, and the sago was probably damaged by fire or water or had in some other way been rendered unsalable.

The wheat flour and cornmeal were employed, where the other materials could not well be used, as in the adulteration of mustard flour.

That the wholesale disposal of these cheap and worthless materials at the prices, which the pure articles bring on the markets, is a fraud, needs no further argument.

It was shown that pure spices and other condiments filled a valuable place in the preparation of our daily food. The adulterants have nothing in common with the articles, to which they are added, and which in many cases, they almost wholly replace. Hence it follows that even if it be conceded, that the adulterants are not injurious in themselves, an injury may be done to public health, by substituting an inert substance or substances for the article which the system craves, or the gratification of our senses requires. But it must be borne in mind, that the waste products are treated as such until they are gathered up by the spice millers. Since they are not intended for human food or even for the food of our domestic animals, it stands to reason, that they are not treated with that care in regard to cleanliness, which is usually bestowed upon articles for human consumption. At least the writer has had ample opportunity to observe that absolutely filthy materials had been employed in this disgraceful practice of adulteration.

Cream of tartar, which at the present time can be bought as a commercial article with a purity of ninety-nine and five-tenths per cent. and which is used both as a drug and in the preparation of food, has been found to be subject to such extensive and dangerous sophistication, as to leave no room to doubt the utter disregard of the manufacturer and dealer for the health and life of the consumer.

The substances used to adulterate cream of tartar are gypsum, starch, acid calcium phosphate and alum. About twenty years ago the writer had occasion to examine the cream of tartar as sold in grocery and drug stores of a town in Illinois and found it to be in a deplorable condition, the actual amount of cream of tartar in some of the samples falling as low as twelve per cent.

In the early days of the existence of the Dairy and Food Commission of this state the condition of the cream of tartar as sold in the city of Columbus was investigated. Eight samples were purchased in the open market at grocery and drug stores at the uniform price of sixty cents per pound and with the assurance in every case, that the article was pure.

One sample contained fifty-four per cent. of cream of tartar, the other forty-six per cent., being made up with starch, acid phosphate and gypsum; another contained thirty-seven per cent cream of tartar, the other sixty-three per cent., being starch, acid phosphate and alum; a third contained thirty-seven per cent. cream of tartar and sixty-three per cent of gypsum. The remaining samples were

similar mixtures, the cream of tartar gradually falling to fifteen per cent., while one sample contained no cream of tartar whatever, it being made up exclusively of starch and alum.

A year or two ago the Dairy and Food Commissioner again collected twelve samples of cream of tartar, while walking from his residence to his office. The purchases were all made on High street in this city, and the price charged was uniformly sixty cents per pound. Of these twelve samples nine were found to be adulterated and seven contained no cream of tartar at all. The adulteration was similar in kind and degree to that of the cases already cited.

The fraud in this class of adulteration consists in selling for sixty cents per pound foreign matters costing from one-half to three cents a pound, a very comfortable profit, even if it must be divided between the producer and retailer. But this phase of the question falls into insignificance when compared with the evil effects of employing or dispensing these adulterated articles in case of sickness. Cream of tartar is a laxative, and is frequently prescribed for this purpose. The substances named above as adulterants of this drug have the opposite effect. This is especially true of alum, which is known to be a marked astringent. How much misery or how many deaths have resulted from dispensing alum in the place of cream of tartar to patients throughout our state and country, we are merely left to conjecture.

For the numerous ways in which the first two provisions of our general food law are violated by the manufacture and sale of articles in daily use, the examples here given must suffice. It may be said, however, in passing that but few of the violations can be regarded merely in the light of fraud. A careful consideration of them would reveal the fact, that in most cases they are at the same time a direct assault upon public health.

The third provision of the general food law deems an article adulterated: "If any valuable or necessary ingredient has been wholly or in part abstracted from it."

Under this head we may mention the wide-spread practice of skimming milk. By this means one of its valuable ingredients, the butter fat, is removed wholly or in part. The arguments already presented against the addition of skimmed milk to pure milk also apply here, and need not be repeated.

A similar violation of this provision is the removal of butter fat in the manufacture of cheese. Good, palatable, digestible and nutritious cheese should contain about all of the butter fat which good whole milk contains. The amount of butter fat in this kind of cheese lies between thirty and forty per cent. of the weight of the cheese.

Cheese containing amounts of fat varying from forty all the way down to two per cent. and less are to be found upon our markets. These inferior kinds of cheese are frequently sold for, and at the price of full cream cheese. That this practice is an imposition upon the consumer both in a pecuniary and sanitary point of view, must be apparent to all.

The extraction of fat from chocolate and cocoa; the expressing of the bland oil from mustard, the leaching of tea leaves, and the extraction of ethereal oils from cloves, cinnamon and other spices may also be mentioned as coming under this head.

The fourth provision of the general food law reads as follows: "An article shall be deemed to be adulterated, if it is an imitation of or is sold under the name of another article."

There is no branch of food adulteration which offers greater inducements to the producer, than the one which this provision of our food law invades. The imitation of genuine articles of food with cheap materials and the ability to sell them for, and at the price of the genuine articles led to the establishment of immense industries, with which the producers of the genuine and better articles of

food were unable to cope. Fraud, in connection with great profits, drove the legitimate articles from the markets, and thus destroyed the business of the producer of these articles, while at the same time it furnished the consumer with inferior articles of food at the price of the genuine and more wholesome ones. The only persons in the land who were benefitted by the establishment of these fraudulent industries were the manufacturer and the dealer, who divided the immense profits between themselves. As examples may be mentioned the manufacture of distilled vinegar, which was fraudulently sold in the open market for cider vinegar, white wine vinegar and malt vinegar, while millions of bushels of apples annually rotted in the orchards of the state; the manufacture of oleomargarine, which a few years ago had driven over six hundred thousand milch cows from our borders; the manufacture of artificial wine, cider, jellies, maple syrup, fruit juices, syrups, etc.

Time will not permit an extended argument to prove that these spurious articles are not as wholesome as the genuine ones which they replace. Suffice it to say, that a comparison of their chemical composition with that of the genuine articles will reveal the fact, that they are all deficient in one or more of the four groups of nutrients as laid down for a perfect food. For this and other reasons they injuriously affect public health.

In conclusion the provisions of our general food law, which prohibit the use of coloring matters and substances which are poisonous or injurious to health may briefly be considered together.

The universal employment of antiseptics as salicylic acid, benzoic acid, boracic acid, saccharin and the like in preserving perishable foods and drinks, constitutes one of the gravest violations of our pure food laws. The fact, as shown by the writer and other experimenters, that as a class these active drugs are diametrically opposed to the processes of digestion, even when present in very minute quantities, should condemn their use in articles of food. But these drugs have other well known, deleterious effects upon the animal system (even when used in oft-repeated small doses), which can leave no possible excuse for their indiscriminate employment by people in all walks of life, who are either ignorant of their pernicious effects or who wilfully disregard them.

Salicylic acid has been found to be generally employed in the manufacture of the following articles: catsups, jellies, jams, preserves, apple, peach and quince butter, sweet cider, grape juice, sweet wine, blackberry wine and cordial, imported beer, etc. It has also been found in canned fruits and vegetables of all kinds, in maple syrup, milk, malt extract used for medicinal purposes, in artificial orange and apple cider, etc.

In order to show the utter carelessness as to the quantity employed, it may be stated that catsups have been examined, which contained twenty-two grains to the pound. In one sample of sweet cider three and six-tenths and in another four and seven-tenths grains of salicylic acid to the pint was found to be present.

The writer knows of cases where one ounce of salicylic acid was used for ten gallons of cider, and one case where ten ounces were added to a barrel.

The fact that this antiseptic is practically driven from our state, and that manufacturers have conceded the dangerous character of the drug and have declined to employ it longer in the preparation of articles of food, must be regarded as a great victory achieved by the State Dairy and Food Commission and the advocates of pure food.

In regard to colors in food it may be stated, that an experience of over nine years in examining all kinds of colored articles has shown, that the poisonous mineral colors formerly employed, are almost totally absent. They have been replaced by the coal tar colors, which are now manufactured in an endless variety of brilliant shades. The only case which the writer can recall is that of French pease, colored with salts of copper. These have been frequently examined and the

amount of copper salts present, calculated as copper sulphate, was equivalent to fifteen doses per pound. Analyses made in foreign countries and recently reported show even a much larger proportion of copper than this. It may be well in this connection to call attention to the significant fact, that the sale of these French pease for consumption in France is strictly prohibited. Their manufacture is allowed only for the purpose of export to other countries. There is a wide difference of opinion as regards the use of coal tar colors in the manufacture of confections and other colored foods, on account of the well known poisonous character of aniline, carbolic acid and other like bodies, from which they are derived, as well as the poisonous nature of some of the colors themselves.

In Austria their use is absolutely prohibited regardless of kind or quality, this being considered by the government as the only safeguard against injury to public health. In other countries of Europe they are partially prohibited, i. e. legal provisions exist against the employment of such specified coal tar colors, where poisonous nature has been established.

It is true that in experiments made upon rabbits and dogs by the writer and other experimenters the feeding of comparatively large quantities of some of these colors for weeks at a time, showed no marked symptoms of poisoning or other evil effects, but others did. In our country and state, there is no restriction placed upon their use. From what has just been said it is evident that the public is not sufficiently protected in this matter in our own state.

At the request of the Dairy and Food Commissioner, the writer has undertaken an elaborate series of experiments to determine what effect these colors may have upon the process of digestion, a subject which has never been investigated. The number of experiments thus far made is too limited to warrant an expression of opinion; but if the results obtained with a number of these colors, will be found to be produced by others, the near future may show ample reasons for regulating if not prohibiting this use of coal tar colors, in the interest of public health.

The Chair: It is probably too late in the evening to go into any discussion of this subject, as I notice a good many are anxious to adjourn. But you will remember the meeting promptly at ten o'clock in the morning in this hall.

The Institute here recessed till ten o'clock a. m., Wednesday.

WEDNESDAY MORNING SESSION.

The Institute was called to order as per adjournment by President Agee, at ten o'clock a. m., after which prayer was offered by Mr. S. H. Ellis.

President Agee: Yesterday morning the second address, according to the program, would have been by Hon. W. N. Cowden, of Quaker City, O., but in his absence Mr. F. A. Derthick presented to us the "Lubin Proposition," and in his place now we will hear Mr. Cowden's address. Permit me to say, gentlemen, that you will be better pleased with the institute, I doubt not, if I am firm enough to close each discussion on time. I have now the pleasure of introducing to you Hon. W. N. Cowden, who will address us upon the question:

**"SHOULD FARMERS CONTINUE TO KEEP SHEEP UNDER PRESENT
CONDITIONS AND PROSPECTS?"**

ADDRESS BY MR. W. N. COWDEN.

I answer this question with an emphatic, Yes, and I spell the yes with a big Y. Some of the conditions and prospects in support of this answer will be given.

CONDITIONS.

(1) Sheep are now as profitable as the average of farm stock or products. Indeed our great staple farm crops are lower than sheep and their products. For instance fifty cent wheat, twenty cent oats, eighteen cent potatoes, three cent hogs, or horses from fifty dollars down to nothing are not equal to sixteen cent wool or lambs at four cents per pound. The great discouragement that has fallen on the sheep industry was partly caused by the expectation that the boom prices of the years from 1860 to 1880 were the normal prices and when the prices of both sheep and wool fell below these figures, many growers at once lost courage and gave up in despair, sold their sheep at whatever they could get and are now inquiring for sheep at two or three times the price at which they sold. A buyer to whom the writer recently sold a one-half deck of lambs, told me that this summer he had bought a double deck of sheep for the same money he paid me for one-fourth of a double deck.

(2) But if sheep are not equally profitable with other farm stock, we in the hilly portions of Ohio must keep sheep even if we sell the fleece at the price of cotton, or throw it away entirely. Sheep for two thousand years have been known as the animal with the "golden hoof," because of the well known fact that the soil which its hoof touches is rendered more fertile each year. The sheep alone among live stock carry their droppings to the highest and bleakest points of the field, where most needed, and also deposit these droppings in just the form they do the most good to the soil and in the form least wasted by the action of the elements. Our valleys are rich enough, having for ages been receiving the washings of the hills, the sheep just as constantly and persistently carrying back these elements to the hills again. In this sheep exactly reverse cattle, which carry the fertility of the hills to the valleys. Without sheep thousands of acres in the hilly portions of the United States are greatly reduced in value and many more thousands of acres in the mountainous parts of the United States are almost valueless.

(3) In the hilly portions of Ohio we need sheep as scavengers. Briers, bushes and weeds of all kinds abound and we need sheep to destroy them, which they do without compulsion and from choice. I know of but three or four kinds of bushes and as many kinds of weeds that sheep will not destroy.

(4) Another consideration in favor of sheep is they not only give their carcass each year, as cattle and hogs do, but they give a fleece and one-half the flock give in addition a lamb thus compounding our capital twice per year instead of once.

(5) Our Ohio climate demands the wearing of woollen clothing and vigorous health requires the eating of mutton by brain workers and persons of sedentary habits. In these days of hog cholera and Texas fever and tuberculosis, we cannot always be sure of the number or quantity or quality of the germs, microbes and bacteria we consume with beef or pork, nor do we know their effects until about two days before the funeral. Not so with sheep; a fat sheep is always a healthy sheep. If a sheep takes disease it is dead before it can be gotten into market.

Such are some of the conditions pointing to an affirmative answer. This affirmative answer is predicated of course on the keeping of the best specimens of the respective breeds,—the scrubs of no breed can be kept with profit, even under the biggest kind of a boom.

PROSPECTS.

(1) The demand for mutton, which has been increasing for many years, will probably increase more rapidly during this era of low prices. Thousands have learned to eat mutton that would probably have never learned except for the low price of the few past years.

The consumption and exportation of mutton for the last year was phenomenal. The Boston Commercial Bulletin for year 1896 says:—"In the first ten months of 1895 we exported two million seven hundred and sixty-six thousand three hundred and sixty sheep against one million three hundred and forty-five thousand and ninety-four in the first ten months of 1894." The same paper shows a loss of from ten to fifty per cent. in pounds of wool in every state in the Union except Connecticut, Arizona, Idaho, Montana and New Mexico, which made a slight increase and for the whole country a total decrease of thirty million pounds of washed wool since 1893. Ohio's loss was from twenty-one million eight hundred and ninety-three thousand six hundred and twenty-five to eighteen million five hundred and thirty-four thousand six hundred and ten pounds.

The same is true of woolen goods; the low price has caused them to be worn by persons that otherwise would never have learned. Then the increase of population will constantly demand more wool and more mutton each year. The diminished supply of each must sooner or later inure to the advantage of the grower.

(2) There are indications of more rational methods among flock-masters. They are beginning to learn that the man must be adapted to the breed and the breed to the man. Then the breed must meet the demands of the market for wool and for mutton also.

We, too, are learning like the English flock-masters to adapt the breed to the climate and the soil. The chalk hills and downs, the moors and the calcareous soils of England each has a breed or family of sheep adapted to it and no attempt is there made to adapt a single breed to all climates, conditions and soils.

(3) Legislation in two directions is necessary to the prosperous life of this industry, viz: tariff legislation and the restoration of silver to the place it occupied before 1873, and the prospects are that we are on the highway to favorable legislation on each.

You, Mr. President, in last week's Ohio Farmer told us to take a cheerful view of every subject and at the same time always tell the truth. This I will now do briefly, as I see the truth.

(a) There are indications that a tariff more or less protective will ere long be passed. Whether it is a revenue tariff or a protective tariff will depend on the wool growers themselves. If they demand and fight for as much protection as other industries get, they will succeed. If they fail in asking, they may expect to fail in getting.

(b) But more important than tariff legislation by far is the return to bimetalism. Tariff legislation can only be chargeable with a decrease of from six to ten cents per pound on wool, while some other cause has further reduced the price some fifteen or twenty cents per pound. A slight investigation reveals this cause.

The wool growers' foreign competition is with silver using countries as Russia, Argentina, China, South Africa, etc. These countries export practically all the wool, they grow. It all meets in London, the world's commercial and financial center. The American importer buys this wool and pays for it practically in silver bullion,

costing him sixty cents in gold dollars. This silver bullion is at par in the silver using countries, because there it is the measure of value of all products, just as gold is the measure of all values here.

Thus the woolen manufacturer will buy our wool at the price he pays for similar imported wools and this having been bought with sixty cent dollars, we must also take the same price and thus we lose the difference between the price of silver in gold and the price of gold.

Or stated from the opposite standpoint, the foreign grower gets virtually a bounty on his wool in the exchange, equaling the difference between the price of silver in gold and the price of gold. This difference is so great that no congress would think for a moment of erecting a tariff wall high enough to allow us to meet them on an equality in our own markets, and Lubin's plan of bounty added to a high tariff would scarcely make us equal.

I have spoken of the prospects in the line of tariff but what of the remonetization of silver?

There are unmistakable signs of collapse in the gold market. There is not enough gold to serve the purpose of final redemption, in the world, and every day is more and more confirming that fact. Every issue of bonds and every dollar added to our debt emphasizes the folly of monometalism and hastens the time of the universal result.

Also the bounty—I know of no better term to use in this connection—above referred to, is paid by silver using countries on the articles they import from gold using countries. This bounty has stimulated manufacturing to such an extent that some of these silver using countries are already invading our markets with their products and at a price ruinous to our manufacturing industries.

Our Pacific coast is already alarmed, and the manufacturers are called to meet in San Francisco January 21st, to consider the situation and devise a remedy.

This was the announced theory long ago, but it aroused no attention, until the Japanese manufacturers placed an agency in San Francisco that sells the best parlor matches at two and one-fourth cents per dozen boxes and good bicycles at twelve dollars, duty and freight paid in each case, and all other articles as sash blinds, all wood work, boots, shoes, cotton goods etc., at similar reduced prices; then at once this theory became a practical one to the Pacific coast manufacturers and demanded a solution.

The Japanese have taken many ship loads of our machinery, and as soon as the goods are turned out by their ten cents a day laborers they will invade the Atlantic markets and then soon the manufacturer and his operators will understand the silver question. Then cometh the end.

I have thus candidly and frankly given my views on the conditions and prospects of the wool industry. I feel that I am on solid ground as no one who has investigated this subject has arrived at a different conclusion.

My object in writing this paper is, if possible, to infuse new courage into the wool growing industry and to preserve the flocks of Ohio that have been built up at such an immense cost of labor, brains and money.

The President: No one was selected to open this discussion, and it is now open to you, gentlemen. There are flockmasters here who are interested. We would like to hear from them.

Mr. O. E. Bradfute, Greene County: I am not known as a sheep man particularly, but we have always kept some sheep, and I propose to advance a theory that may be startling to some of you. I believe it is profitable to a farm in the State of Ohio to keep a few sheep if you never realize

a single dollar from the sale of any of their products, either mutton or wool. Let me illustrate. We had on our farm year before last a timothy meadow which gave a great deal better prospect for white top or daisy than it did for timothy hay. The only thing to do was to get rid of that white top, and the method we used was to turn one hundred head of sheep onto that meadow. Those sheep remained on it all through the month of May. Permit me to say that when they were taken off there was neither white top nor timothy present. Fortunately, the rains came at the right time and that timothy meadow produced nearly two tons to the acre, or forty tons from twenty-four acres, and it was positively free from white top. We sold that hay in stack at seven dollars a ton, or two hundred and eighty dollars as a result of keeping these one hundred head of sheep on the meadow. If we had never sold a single pound of wool or a single head of sheep they would have more than paid for their keeping. I think it will pay to keep some sheep, even if we don't get any money advantage out of them.

Mr. S. N. Smith, Morgan: I would like to ask the gentleman what time those sheep were placed on the meadow. I would like to have the exact time.

Mr. Bradfute: I could not give you the exact date, but you know about the time of the year when white top begins to show, and as soon as that was discovered the sheep were placed on and left on until about the first week in June. Unless the wet weather had set in we would have had very little chance for a hay crop. I would not advise you to do it every time, because you might fail to secure a hay crop unless wet weather set in. The sheep will eat the white top.

Mr. Harbage, Madison: A few years ago I bought a piece of meadow land. We ran a fence through it and I concluded I would pasture my half with sheep. I turned the ewes on it and kept them there till about the middle of May and we saw plainly that they had more pasture than they needed and we concluded to take them to a field of eighteen acres and get what hay we could off of it. When we cut it we had by far a better meadow than our neighbor's field, because his was full of the white weed, and the sheep, as the gentleman has said, had virtually cleaned out the white weed. We have noticed in a great many instances where we keep sheep in the fall or spring that they clean out the white weed right along. As you all know, the white weed makes a start one year and the next year it comes into bloom; it don't grow from the seed in the spring. It grows one year from the seed, winters over, and the next year comes up daisy or white top. If you turn a lot of sheep in there early in the spring or late in the fall you will get rid of the white top. I keep a little bunch of sheep all the time, probably on the average one hundred and fifty, and I think they are as profitable as anything I can raise. I do not see why they are not. We have a bunch of lambs that are contracted now for early February at five cents. I look around and see a great many of our farmers com-

plaining at the price of wheat, and a year or so ago they turned right around and sold their sheep, broke up their fields, and put them into corn and wheat, and the already glutted market for wheat is being glutted worse by having a lot more wheat put on it, when the markets of the world do not need it; and it seems to me there is no need of a pound of wool being imported into this country when we have all the facilities right here at home to raise that same wool. Gentlemen, it looks to me like a suicidal policy for us to undertake to wear our farms out to undertake to ship grain to Europe and let them enrich their lands by raising wool and ship it back to our farmers. (Applause.)

Mr. Sprague, Union: I want to voice the sentiment of my friend who has just spoken. I have had some experience in raising sheep and wool. I began in 1862, and I learned that the sheep was a scavenger. He not only destroyed the white top, but he destroyed the grass and a great variety of weeds that infested our farms, and I can advise the keeping of sheep to my brother farmers, simply from the good effect that comes from the keeping of the sheep. They put the manure on the high ground where we want it, and distribute it in such quantities and in such a manner as does a great deal of good. It is correct, as my friend here states, that it is a suicidal policy to abandon our sheep and raise grain. We already have more grain than we know what to do with. We raised last year two thousand million bushels of corn; we raise annually five hundred million bushels of wheat and the same amount of rye. All avenues of farming are overstocked, except that of the wool and mutton industry, and I want to say to you, gentlemen, that while I have always been in favor of a high protective tariff on wool, yet there is money in sheep without any tariff. Last Monday I contracted my lambs at five dollars per hundred pounds, to be delivered next March, and I have got the money on the contract. I bought my ewes last winter at two dollars a head and they raised me a lamb apiece. Now there is money in raising lambs at five dollars a hundred. Any man who knows anything about sheep at all knows that. There is no money in raising hogs, because you don't know whether they will all die with the cholera, although a neighbor of mine says he would not give a man twenty-five cents to insure him against cholera. There is no money in raising horses and no money in raising grain, because all the avenues are overstocked.

A Delegate: I just want the privilege of voting in favor of the sheep. I have always found in a business sense it is good policy to go into anything when everybody else is going out, but as some of our friends here have said, while there may not be fortunes in sheep on the farm, is there in anything else? Won't sheep to-day stand just as good a show as any other line or specialty of farming? And if so, do that and make money as these friends have said. Everything is against the sheep. Why not go into that business, then let something happen that the sheep may have a little better protection or better in any line, that would favor the sheep

industry, then you would be there right in the procession ready to go ahead?

Rev. W. R. Parsons, Franklin: John Randolph once said that he would go two miles for the sake of kicking a sheep. The sheep has been subjected to a great deal of bad treatment, but I think from what we have heard this morning that if there is any stock that can be handled to advantage at the present time, beside the dairy cow (great laughter), it is the sheep. I wish to give a little item of experience that I had some years ago when I had some three hundred head of sheep on a farm I then owned, and how I was able to keep them during the fall, or at least two months of that time, with very little expense to myself and with considerable advantage. We had a crop of sorghum, some twenty acres, and as pasture got short we turned our sheep into the sorghum and they gathered in the blades that they could reach, so that when it was time to utilize the crop we had got rid of a large share of that that was so difficult to get rid of, and the sheep were not only scavengers, so far as this was concerned, and briars also, but they saved a great deal of the stripping of cane, and I am sure that sheep and sorghum go well together, so far as my experience went in that instance, and I believe that every farmer in Ohio who would bridge over that period when the drouth comes to you that it would be very helpful to the flockmaster if he would have a quantity of sorghum to turn his sheep into. While I am not an advocate of any special machinery for the manufacture of this product of sorghum, yet I am sure there is no one thing that can be utilized on the farm that will pay better than a crop of sorghum, and as these men say, a "crop" of sheep.

Mr. McCormick, Gallia: I want to heartily endorse that paper as presented by our friend, Mr. Cowden. I live down in a river county, and the gentlemen present who are familiar with our surroundings, know that we have men down in our county who ought to be ashamed to look a sheep in the face. Sheep for the last eighteen months have been selling there for as low as seventy-five cents per head, mutton sheep. I have not had any to sell at that price. I have kept a few sheep, but as my friend Parsons says, I have been interested in dairy breeds, and these two things have been the most profitable to me of anything that I have touched. Of course, in our rotation of crops, we are compelled to raise wheat, and for the last three years we have had no success in getting grass. We are not going to plow under any more for wheat than we can help, but we are going to stick to sheep and try to raise some mutton for our neighbors, so that we can feed our friends across the water with American mutton.

Mr. E. C. Ellis: After Brother Cowden's paper and the discussion that has gone on I don't know when I have been so much interested in any subject. I do not keep sheep. I have kept them, but in our whole township there is not a good bunch of sheep all put together. But we have been learning this morning, right from sheep men, headed by Brother Cowden, that it pays to keep sheep anyhow. The brother from Madison

county said it paid big anyhow, and a friend of mine just last Monday had a bunch of lambs that he asked five cents for, but the buyer didn't quite take them at that, but he thought he would, and now we learn that it pays to keep sheep anyhow whether you get anything for their wool or not. Now, this friend of mine, who has nearly two hundred lambs for sale, has hogs and cattle, and he told me in a conversation that he could make a pound of mutton cheaper than he could make a pound of either beef or pork, and he knows what he is talking about. Hogs, as I told you yesterday, is my crop, but I had to sell my hogs at three and a quarter cents per pound, and I had just as nice a lot of Poland China hogs as you ever saw.

Professor W. D. Gibbs, Columbus: We have with us this morning Prof. C. E. McKerrow, Superintendent of Institutes of Wisconsin, and one of the best known sheep raisers in the land, and I am sure we would like to hear from him.

Professor G. E. McKerrow: I don't like very well to come forward, because some of my best friends in the State of Wisconsin have said to me during the last two years that it must require a good deal of "brass" for a man to stand up before intelligent farmers and endeavor to persuade them that there is profit in sheep husbandry when wool is selling for from ten to fifteen cents a pound. And for that reason I have to presume a good deal upon my "brass" this morning to face this audience, but as I have the brass and a good deal of enthusiasm for the sheep, I will say a few words to you in favor of that animal.

I have had a little experience in the line. The first few dollars I had to call my own were invested in sheep, when a mere boy, and from that time to this I have stuck to the sheep through thick and thin, and I believe that to be the right policy in every line that we have to follow. I believe that every farmer should follow some line of livestock husbandry, and should keep it in the best possible condition to realize upon his crops, and after he has looked over his farm and studied its conditions and the conditions of the market surrounding him, his own likes and dislikes of different animals, he should decide what line of livestock husbandry he will follow, and then when he embarks, follow it through thick and thin, up hill and down hill, and if he does this, when it rains porridge he will have his dish right side up to catch some, but if he don't do this, he will find that he has his dish upside down, and when it rains porridge he gets none. I am considerable of a sheep crank, but I would say you cannot raise the high class mutton, that commands the top of the market, on brush, but you can put into the weeds and brush something else that is good and raise that kind of mutton. We talk about mutton sheep, of course, in these days, as mutton is a primary article of profit, and with all our breeding we must not forget that mutton must be well fed; that these animals are often brought up to their high state of perfection by good feeding and good care, and by neglecting them a few months they make

the meanest kind of "well-bred" animals. So let me say that whatever you breed, be sure that you feed well. There are so many things I would like to say this morning that I hardly know where to begin, but let me say this, that you should pay special attention to the sire that heads your flock. Now, we generally hear it said the sire is half the flock. This is true in pure-bred herds and flocks, and it is more true in the lower grade flocks and herds, because the sire brings all the improvement to these herds. Then you should be very careful with your flocks, for a "flock half summered is well wintered, and a flock well wintered is half summered," and is not so susceptible to disease.

President Agee: This afternoon we have another address on sheep, and we hope Superintendent McKerrow will be present with us and speak further upon the subject.

Following the usual custom, I will now appoint a committee of three to nominate a president and vice president of this institute for the coming year. I will name Col. J. H. Brigham, of Fulton county; Mr. Albert Hale, of Summit county, and Mr. Samuel Taylor, of Franklin county.

The next address upon the program will be by Hon. N. Ohmer, of Dayton, Ohio, upon

"THE FARMERS' FRUIT GARDEN."—BY N. OHMER.

Mr. President and Gentlemen of the Convention:

I appear before you to-day, my friends, to address you upon a subject that should interest all who occupy farm lands, and call themselves farmers. One that has been, and is being greatly neglected, namely: The Farmer's Fruit Garden. Not what it is, but what it should be.

No one will deny the fact that fruit is not now looked upon as a luxury, but as a necessity. There is no food that man consumes that conduces more to good health than fruit; ask any physician and that will be his answer, attend the markets in cities, look at the contents of baskets on the arms of men and women, and you will see but a few that do not contain more or less fruit, no matter how poor they may be. I very well remember the time when fruit was really a luxury that could only be afforded by the rich, it being considered a necessity to insure good health. I am and have been surprised that so few farmers have fruit in some form on their tables at each meal of the day, of every month of the year.

It has been my good fortune for many years to do a good deal of traveling about our country, and what do you see in the way of a fruit garden on a very great majority of our farms in Ohio? With few exceptions, you will see an old orchard, principally of apples, a few pear and cherry trees, most of which were planted, especially the apple trees, by your fathers and grandfathers. Most of these trees have been neglected, and are dead or dying. There may be a quince tree or two, and a few currant and gooseberry bushes around the garden fence, or on one side of the path. This as a rule constitutes most of farmers' fruit gardens of these times. Am I not right?

A few words personal to myself, giving you the reasons why and how I became a fruit grower.

Some of you are no doubt aware that I have been for over thirty years engaged in growing fruit on what has been considered a large scale, for market.

From 1845 to 1857, I was engaged in business in Dayton, this state. My health broke down; my physician told me it was country or graveyard with me; I could take my choice; I chose the former. I sold out my business and purchased one hundred and four acres of land near the city, and began to study a new profession at thirty-four years of age. I began planting fruit of all kinds, on a large scale, that do well in our state. People then said I was crazy. They wanted to know what I would do with so much fruit when my trees and berries began to bear. I told them they would see when that time came.

I attended to my trees and plants in the best manner. I went at it in a business way, bound to make it a success, and I did it. I raised big crops of nice fruit that I sold readily at good prices. In other words, made it pay in dollars and cents, and better than that regained my health. Five years ago I sold my farm to a company, which was then platted into city lots, after which I purchased from them my residence and eleven lots, six of which I have in a lawn around my dwelling, four as my family fruit garden and one as a pasture for my horse to play in.

This canvas will show you my present fruit garden, the like of which most farmers could and ought to have. You see everything is planted in rows; easy to cultivate; nearly all horse work. Here are two rows of quince trees, one of peaches, one of plums, one of pears, one of cherries, two of grapes, two of red and two of black raspberries, two of blackberries, one of pie plant, one of asparagus, and last though not least three of strawberries.

This of course is more fruit than we can consume. We have fruit in some form on our table every meal the year around. We use less meat of course, which is all the better for us. The surplus fruit is either sold or given away, the latter is easy done. You notice I have no apple trees; apple trees take too much room in a city lot. I consider apples the most healthful of all fruits. We buy all we need; were I on a farm I would include apples of course. This diagram gives you an idea of what I have. You can enlarge it as much as you please. It gives you my idea of what a Farmer's Fruit Garden should be.

Is it not high time that you should turn over a new leaf, and agreeably surprise your wives and children? When you return from this institute tell them you heard Nick Ohmer tell you what a Farmer's Fruit Garden should be, and that this coming spring you would plant fruit trees, vines and berries that will in due time afford you an abundance of fruit for your table, from strawberries to the end of the list. Your wives and children will throw up their hands, not in holy horror, but in praise and thanksgiving for the good resolve you then made. And see that you don't forget it.

The following is a list of such fruits as I would recommend to plant:

APPLES.	PEARS.	CHERRIES.
Yellow Transparent.	Bartlett.	Early Richmond, sour.
Maiden Blush.	Flemish Beauty.	Montmorency, sour.
Grimes' Golden.	Clapp's Favorite.	Dye House, sour.
Baldwin.	Keifer.	Windsor, sweet.
Stark.	Duchess.	Ida, sweet.
Northern Spy.	Lawrence.	
Ben Davis.	Vicar.	
Early Harvest.		
Wealthy.		

PLUMS.	PEACHES.	QUINCES.
Lombard.	Early Rivers.	Orange.
Bradshaw.	Lady Ingold.	Champion.
Murdy.	Elberta.	Ray's Mammoth.
Burbank.	Diamond.	Meech's Prolific.
Abundance.	Dean's Red.	
	Mountain.	
	Wheatland.	
STRAWBERRIES.	RASPBERRIES.	BLACKBERRIES.
Crescent.	Eureka.	Ohmer.
Warfield.	Palmer.	Snyder.
Haviland.	Gregg.	Taylor.
Buback.	Johnson Sweet.	El Dorado.
Greenville.	Cuthbert.	
Bederwood.	Turner.	
	Marlboro.	
CURRANTS.	GOOSEBERRIES.	GRAPES.
Fays.	Downing.	Concord.
Cherry.	Houghton.	Worden.
Red Dutch.	Industry.	Delaware.
White Dutch.	Crown Bob.	Woodruff's Red.
	Whitesmith.	Pocklington.
		Niagara.

The latter three Gooseberry varieties are foreign; large, productive. Liable to mildew, which can be prevented by spraying with Bordeaux Mixture.

Mr. S. H. Ellis: I want to ask Mr. Ohmer a question. I got raspberries of Nicholas (Mr. Ohmer) fifteen or eighteen years ago and have been growing them ever since. But in my raspberries and blackberries I was failing, and I got the Taylor and cultivated them several years, but never got a single pie from them, and dug them up. They dried up. I kept my berries heavily mulched from one year's end to the other, for the last four years, and it would have done your soul good to see what a crop we had last year in extremely dry weather.

Question: When do you mulch the plants?

Mr. Ellis: I keep them mulched all the time; each spring put on an additional mulch. If the weeds come through or the mulch rots down, I put on new mulch, right on top of the old.

Rev. W. R. Parsons: I would like to ask this gentleman, Mr. Ohmer, if he knows any remedy by which we can deliver ourselves from the pear blight?

Mr. Ohmer: You will have to ask somebody else for an answer to that question.

Mr. Phelps: I would like to ask Mr. Ohmer what he knows about the Weaver plum?

Mr. Ohmer: I do not know it and am not familiar with it.

Mr. Phelps: Some six years ago I bought three trees of the Weaver plum; those trees grew large and the leaf looked more like a peach leaf than a plum, but they have never borne any.

Mr. Ohmer: If you had other varieties with them probably they would bear.

Mr. Phelps: I have other varieties with them.

Mr. A. J. Blue, Madison: I wish to answer Mr. Parsons' question in regard to pear blight. Just this morning down at the Chittenden hotel I met Professor Lehr, of the Ohio Normal University, and in conversation with him he said that he had discovered a remedy for pear blight. He says he accidentally found a remedy, he thinks. Some mischievous boys had torn the bark off of a pear tree affected by the blight, and he discovered that this stopped it, and it improved very much by this accidental tearing off of the bark. So he concluded to try an experiment, and so he scarred the tree with his knife clear down the side of the tree and some of the limbs, and he said that some trees last year affected by the blight had been perfectly clear of it.

Mr. Ohmer: That might have occurred without scarring.

The President: We have a few minutes assigned for this topic yet, and the discussion is to be opened by our friend, Hon. E. C. Ellis. I am very sorry that the discussion must be limited to five minutes.

Mr. E. C. Ellis: I don't understand why I have been asked to open this discussion. I was a fellow townsman of Mr. Ohmer's and remember very distinctly when he was in business and when he went out on the hills to raise fruit, and I have watched his work with a great deal of interest. He had a picture up there of his fruit garden as it now is, and I want to say to any of you who go to Dayton about the time fruit is in full bloom next spring take a trip out to the hills and look at Mr. Ohmer's fruit garden. You will find a thing of beauty and a joy forever. You will remember it as long as you live.

I have dropped into the way of raising the smaller fruits and some of the larger sizes. I believe, as has been said, that fruit is one of the healthiest articles of food. I am sure that at our house when the strawberries come we fatten on them. I think that every farmer ought to have enough fruit and have it in such varieties that it can be prolonged almost through the entire season. This can be done with strawberries, blackberries and raspberries. I obtained my first raspberries from Mr. Ohmer. I bought the Gregg, and of the red the Turner, and I propagated them from the same parent stock, having both the black and red raspberries. Now, I am near a good market, just a few miles from Cincinnati, and I find that my small fruit is not only healthy, but profitable. I do not really know what I would have done during the early part of the season if it had not been for my strawberries. As my namesake here (referring to Mr. S. H. Ellis) does, I mulch them very heavily; so heavily that last year at our farmers' institute when I gave an account of the condition I had put my

strawberries in for the winter, our berry raisers about me laughed at the idea and said that in the spring I would find my strawberries had been smothered out; but when spring came I found, instead of being smothered out, my berries had gone through the winter nicely. It was not an unusual crop this year, but off of an acre and a half I picked ninety-seven bushels of strawberries; they were all sold on the ground and they brought me ten and a half cents a quart, or three hundred and thirty-seven dollars. However, it cost me twenty-three dollars to have them picked. We also have small fruits at our house the early part of the season, and as long as they can be prolonged, and they can be prolonged several weeks by heavily mulching and keeping back.

Mr. Taylor, Franklin: I want to ask about blight on pear. The gentleman back here spoke about slashing with a knife. We have quite a good many pear trees and do some spraying with Bordeaux mixture, and we have had pear blight for several years. Last year we sprayed six times and were not affected with the blight at all on any of the fruit trees. Whether that is a preventive or not I am not able to say. Now, in relation to his Weaver plum, I rather think it is not the Weaver plum.

Professor W. R. Lazenby: This is the only horticultural subject on the program, and I think we ought to have a fair show. I want to express my appreciation of the fact that horticulture is receiving a little recognition at the hands of the State Board of Agriculture. I believe it has been slighted, and the interest which is manifested in it shows that in the coming years we ought to see that a little more recognition is given to strictly horticultural subjects. I listened with a great deal of pleasure and satisfaction to friend Ohmer, because he always has something to say and says it well, but I think he was a little unfair to the farmers. If I were asked to say what the most favorable distinguishing characteristic of the farmers of Ohio is, from that of many other states, especially west and south, I should say it is the fruit gardens. We find orchards of apple trees, pear trees and plum trees surrounding their homes,—I admit that these are absent sometimes, and sometimes not taken care of in the best way,—and they give an idea of a sense of comfort and thrift to our homes that we do not find in other states and even in other countries.

President Agee: We will now listen to the report of the nominating committee.

Col. J. H. Brigham: Your committee beg leave to submit the following report: We recommend for president for the ensuing year, Prof. W. R. Lazenby; for vice president, Mr. N. W. Cowden.

(Signed by the committee.)

On motion the above report was unanimously adopted by the Institute.

President Agee: I desire to introduce to you one who, I believe, has a future before him as a leader in agricultural study, Assistant Professor W. D. Gibbs, of the Ohio State University.

"SOIL MOISTURE AS A FACTOR IN PLANT PRODUCTION."—BY W. D. GIBBS.

Of all the factors influencing the growth of plants, water is, without doubt, one of the most important. Scientists have for a long time recognized this fact but not until recently have practical farmers come to understand its importance. An evidence of the increasing knowledge along this line is shown by the widespread interest that is being taken in irrigation, not only over the arid regions of the west, but also in the humid climate of our own and neighboring states.

More attention has also been given to improved methods of plowing and cultivation with a view to retaining the greatest possible amount of moisture in the soil where it may be taken up and utilized by growing crops.

An idea may be formed of the importance of moisture in plant growth if we look at the amount contained in some of our farm crops. The fact that green plants lose a large proportion of their weight in drying is familiar to all. Pitching a given amount of green grass on a wagon is vastly different from pitching the same bulk of dry hay on the same wagon. The loss plants sustain in drying is made up largely of water, the amount of which, compared with the dry substance found in plants, is very great. In one hundred pounds of green corn fodder we find seventy-five to eighty pounds of water; in one hundred pounds of fresh meadow grass sixty to seventy pounds of water; in one hundred pounds of red clover eighty-six pounds of water; while in melons, cucumbers, and turnips there is often as much as ninety per cent. of water in every one hundred pounds of fresh material. Seeds do not contain nearly such large amounts of water. Wheat, rye, and oats contain about fourteen per cent. each, while corn contains twelve per cent. Even in dry fodders we find considerable moisture, averaging forty per cent. in dry corn fodder, thirteen per cent. in well cured timothy hay, and as high as nine per cent. in dry wheat and oat straw. It is impossible at ordinary temperature to dry out all the water held by plants. This can be removed only by prolonged exposure to high temperatures.

All of our agricultural plants obtain their water exclusively through the roots. Leaves and stems do not absorb water to any appreciable extent. A well developed root system is of the highest importance to plants. Roots are the plants' water pumps.

In this connection it may be mentioned that in soil moisture as in everything else there may be too much of a good thing. The plant depends largely for its ability to do work on four factors, heat, light, food, and water. If these are furnished in the right amounts at the right time the maximum amount of work is performed by the plant and the greatest growth occurs; if, however, any one or all of these factors are deficient, or in excess, the ability of the plant to do what is required of it is impaired. Excess of water in the soil fills the air spaces and causes the plant roots to suffer from the want of oxygen.

It has been found that if the water in soil amounts to seventy or eighty per cent. or more of its water holding capacity the soil is not well adapted to plant growth. Most plants do best when the water in the soil amounts from forty to sixty per cent. of the water holding capacity. Soil well adapted to wheat has been found to contain about thirty pounds of water in every one hundred pounds of the fully saturated soil. The amount of water in this soil most favorable to the growth of wheat is from forty to sixty per cent. of thirty, or about twelve to nineteen pounds of water per hundred pounds of soil.

Plants take water from the soil by means of minute root hairs which branch out from the main roots and thread their way through the soil, pushing around and between soil grains in all directions. Water taken up by the roots passes upward into the stem and foliage of the plant. It will be remembered that all of the

mineral elements of plants, and nitrogen, are taken from the soil, and these can be taken only through the medium of water. The water absorbed by roots, then, is not pure, but contains in solution small quantities of all the soluble compounds in the soil. Some of these compounds are absolutely essential to the maturation of the plant. A soil may contain an abundance of plant food but if there is not sufficient moisture present to dissolve this food and carry it into the plant tissues, the soil is a barren waste. This is precisely the condition of affairs over much of the drouth stricken area of our western states. Plant food is abundant but there is not sufficient moisture present to dissolve it and carry it to the plant.

The amount of water used by crops during the growing season is very large. Prof. King who has made extensive experiments along this line, finds, that in Wisconsin the following amounts in tons of water per ton of dry matter and in inches of water per ton have been lost by evaporation from plants and soil:

Dent corn used	309	tons	=	2.64	inches water per ton of dry matter.
Red clover	" 452	"	=	4.03	" " " " " "
Oats	" 522.4	"	=	4.76	" " " " " "

The fact that growing crops take large amounts of water from the soil was clearly shown in an experiment with rye on the Ohio State University farm. The field used was of uniform fertility. A crop of rye was grown on a portion of this field while the other portion remained fallow. Several days before the rye was harvested the portion of the field which grew no rye was plowed and prepared for corn. After the rye was removed that portion of the field was plowed and prepared for corn, then the whole field, including the portion which had grown a crop of rye and the portion which had not, was planted to corn. When we came to harvest the crop of corn we found a great difference in the appearance of the plants on the rye ground and on the fallow ground. The stalks of corn on the rye ground were smaller and at least one-third shorter than the others. The yield of ear corn for ten shocks, each ten hills square, on the rye ground was six hundred and ninety pounds, while for ten shocks of the same size on the other portion of the field the yield was two thousand one hundred and twenty-five pounds, or more than three times as great. The yield of straw on the rye ground was one thousand pounds, while on the other ground the yield was two thousand four hundred and thirty-five pounds, or more than four times as great. To what shall we attribute this great difference in yield? Can it be possible that the rye crop so completely exhausted the soil of its fertility that it could not grow a fair corn crop? I think we agree that this could not be the reason. Let us see how much water was taken from the soil by the rye crop. There were harvested from fifteen acres, thirty-three tons of green rye, or thirteen thousand two hundred pounds of dry matter. As it requires four hundred pounds of water to produce one pound of dry matter of rye we see that three hundred and fifty-two thousand pounds of water or one thousand two hundred barrels were pumped from each acre of ground by the rye roots. While we can not say certainly that the lessened yield on the rye ground was due to scarcity of water we know that all the facts at hand support this theory.

Now if we are agreed that water is a factor of so much importance to plants we understand at once the necessity of carefully guarding the supply of moisture in our soils to prevent waste either by excessive evaporation or from flowing off over the surface, or loss by percolation through the soil beyond the reach of plant roots.

There can be no doubt that conservation of soil moisture is one of the most important questions before farmers to-day. The excessively dry seasons of the past few years emphasize this fact. It is well to think and talk about the practicability

of irrigating our farms, but in the meantime let us see to it that we adopt only the best methods of cultivation, and that soil moisture is saved by every possible means. The farmers of our state have to compete in open market with the vast fertile prairies of the west. This is an additional reason why Ohio farmers, in particular, should give the closest attention to practical methods by which crop production may be increased.

President Agee: I see Professor Hunt in the room, and I am sure we want to hear from him on this subject.

Professor Thos. F. Hunt: I think the audience will be very thankful to me if I do not take much time. There is one thing, however, that occurred to me, that I might say, and that is to emphasize the importance of stirring the soil in conserving the soil moisture. I think perhaps Professor Gibbs did not dwell on that so fully as he might have done. Professor Whitney has made this illustration: He says that the earth is surrounded by three envelopes; first, an envelope of soil; second, an envelope of water, and third, an envelope of air. Now, water falls through the air and it falls through the soil, but the soil offers more resistance. The water continues to sink through the soil until it gets down to sea level. We should make it less rapid or more rapid as it needs to be, and these are the reasons why we cultivate and fertilize land and why we drain clay land.

Why cultivate land? At the University last winter some of the students in my department made some experiments. First, they took an ordinary filter and put some dirt in it very loose, and determined the amount of moisture the soil would hold. They tried Mr. Agee's soil, and some soil from the experiment station farm, and found that they varied. Then I said to them, "Take this soil and make it solid, pack it just as it would be in the earth, then find how much water it will hold." They did so and found it varied in different soils, but in the most compact soils it held just about half as much as in the loose soils. Now, I said, "Young gentlemen, what do you stir the soil for?" They said if you stir the soil and make it loose it will hold twice as much water as if you leave it compact. Now, I want to emphasize that fact that when you stir the land and make it loose it will hold twice as much water as when you do not stir it.

Mr. Hines: I would like to ask Professor Hunt, if, according to that theory, the deeper you stir the soil the better it would be?

Professor Hunt: Certainly, within reason; if you do not have a crop on the ground that you would break off the roots or something of that kind. If you have a crop of corn you cannot stir it deep; you do more harm than good.

Mr. S. H. Ellis: Do you want it to hold all the water it can hold on this nice, loose soil?

Professor Hunt: That is the thing to do as a rule.

Mr. Ellis: Plants can use the water that is between the particles of soil?

Professor Hunt: Certainly they can. Where did you suppose it comes from if they did not get it from the soil?

Mr. Ellis: I heard they got it from the particle and not from between them.

Professor Hunt: That is true enough. They get it from the soil, and if you stir the soil and make it finer there are more surfaces about which the water would be. Professor Whitney has shown by actual experiment the external particles of a cubic foot of soil are equal to from one and one-half acres to three acres, just the external surfaces of a cubic foot, if you stir it and make it fine. That is just the reason there is more water in the soil.

Mr. S. H. Ellis: Simply in between the cavities?

Professor Hunt: I suppose so.

Question: Would you recommend deep plowing in breaking a soil?

Professor Hunt: I always advocate plowing as deep as the soil will admit within reason.

Mr. John Larimer: I spoke yesterday in reference to a field I have been trying an experiment on for ten years, and my plan is to plow the first week in December each year, turning the crop of clover and wheat stubble under and plowing a little deeper every year. The stubble and the clover that are there I think hold the moisture for the corn crop following, and the freezing and thawing of the winter prepares the ground in the very best manner for the corn crop. It is then in as fine a state of cultivation as we can make it. Then I advocate cultivating the corn shallow. The corn roots have plenty of room in the old stubble and the clover that were turned under, to get the moisture, and cultivating this shallow retains the moisture.

Professor Lazenby: I would like to hear Professor Gibbs explain why the mulch when it is very fine, as he understands, holds so much more moisture when it is loose. Now, doesn't it evaporate more in that condition? We don't want the moisture carried off into the air, we want to have it retained. This is a point I would like to have explained.

Professor W. D. Gibbs: When we cultivate the soil and loosen up the layer on the surface we make the particles of soil farther apart, and stirring them up they are not wedged in so closely together as they are in unplowed soil. After we cultivate that soil the first thing is rapid evaporation which takes place from the surface of that mulch, because there is more surface exposed than on the unplowed ground. When the moisture in that surface has evaporated then I say the moisture from below a foot or two feet and so on, coming up by capillary attraction through the surface is stopped, there at the beginning of the mulch, because the openings in the mulch are large, too large for capillary action to take place, and the water will not come up through it.

President Agee: You will remember, gentlemen, your decision yesterday that we would meet at the State University grounds to-day at one o'clock.

And thereupon the Institute took a recess until 2 p. m. of same day.

AFTERNOON SESSION, HELD AT OHIO STATE UNIVERSITY.

Columbus, O., January 15, 1896.

Order was called by President Agee at 2:15 p. m. in the chapel of the Ohio State University, pursuant to adjournment. The president said: The discussion of the several papers during the Institute has been limited, but if there is any subject that any gentleman would like to bring up for five minutes, we will be glad to have it discussed now.

If there is no question you desire to discuss, as we want to wait two or three minutes before beginning the regular program, we will in the meantime listen to Mr. S. H. Ellis, who has a few words to say to us.

Mr. Ellis: Mr. Chairman and gentlemen, I do not often find fault with Brother Agee, but I don't just exactly like the way he put that. It is a question with me whether I have a word to say to you or not, but he insisted that I should say something.

I will say just a few words in reference to this plant that we are on and have been examining. Possibly most of you know as much about this as I do. We are now on the ground that was set apart and dedicated for the education of the industrial classes of Ohio by a magnificent grant of congress way back in the years gone by. The farm here, as most of you are aware, was not purchased by congressional appropriation. When Ohio received the grant that provided for the establishment of the institution, there was appointed a board of trustees to locate the Ohio Agricultural and Mechanical College; and in the act was an enabling act allowing the commissioners in counties to make propositions, tenders of land or money, to induce the trustees to locate in their counties. A number of the counties of the state made propositions and offered sums of money. Franklin county offered three hundred thousand dollars if the trustees would locate the institution in this county. The trustees accepted that proposition, and this farm of over three hundred and fifty acres, and here now in the city of Columbus, was bought with that money. Part of the building that we are now in was erected with the money that came from Franklin county, and the dormitory out here was erected with part of the same money. The institution was here in the mud. I was here the first winter, was anxious to see what the outlook for farmers' boys was in Ohio, and came to visit them, and there were not as many students here as there are persons in this room now, just a little handful. It was rather a

discouraging looking plant. But by the support that it got from you and your representatives in the legislature and in congress, with additional donations and a munificent grant of the legislature a few years ago, we have a grand plant here now, and I am glad we have had this opportunity of visiting it.

In its early history I was one of its trustees, was nine years a trustee, and while I have been off the board for several years now, I do not lose a particle of my interest in the development of this institution. From its handful of students here then it has grown to nearly one thousand now. Young men and young women take regular courses. It was then called the "university." Dr. Orton, who was then president, did not fancy calling it that, but thought that we ought to have a university if we called it university, and since that time it has developed into a university with its collection of colleges, and is now one of the grandest educational institutions west of the Allegheny mountains. And it belongs to the industrial classes of Ohio. I am glad so many farmers have had the privilege of visiting it to-day. (Applause.)

President Agee: The first address upon the program this afternoon is an address by Director C. E. Thorne of the Ohio Experiment Station.

Director Thorne presented the following:

**"SEVEN YEARS' EXPERIMENTS WITH FERTILIZERS."—BY
DIRECTOR C. E. THORNE.**

Of the ten or more chemical substances, which have been found to be essential to the life of plants, only three are likely to be deficient in ordinary soils, namely: nitrogen, phosphoric acid and potash, and these substances are more frequently locked up in insoluble, or difficultly soluble forms, than actually wanting in the soil.

In table I (see close of article) is given the average yields of corn, oats, wheat, clover and timothy in Ohio during the ten years, 1880-'89, as shown by the statistics collected by the township assessors, and the total quantity of nitrogen, phosphoric acid and potash which would be removed from an acre of land in five years by such average crops, were they grown in a five-crop rotation—a rotation which is more or less systematically followed over the greater portion of the state. The estimates of fertility removed are based upon the official statistics of crop production, as stated, and upon an estimated average of one hundred and ten pounds of straw to the bushel of wheat, seventy pounds to the bushel of oats, and sixty pounds of fodder and fourteen pounds of cobs to the bushel of corn, these averages for straw and fodder being deduced from the statistics of the Experiment Station, where both straw and grain have been carefully weighed for a series of years.

This table shows that the constituents of fertility would be removed in such a rotation as that mentioned approximately in the ratio of one of phosphoric acid to three of nitrogen and two and one-third of potash; and, if we assume that the fertilization of the soil is purely a chemical process, and depends upon returning to the soil the chemical constituents which the crops have carried away from it, it would be necessary to use fertilizers having a similar composition to that indicated by these ratios to produce the most economical result.

The only fertilizer in common use which approaches this composition is the manure of the barnyard. Eighteen tons of average barnyard manure would re-

turn to the soil the fertilizing constituents removed by five crops of such a rotation as that described, with a margin to spare; or, the same amount of fertility might be secured in some of the commercial or chemical fertilizers now used for this purpose, but it would be necessary to mix them in different proportions from those of the ordinary mixed fertilizers, as in these the ratio of nitrogen to phosphoric acid is usually the reverse of that indicated by the table given, the reason for this being that it is not generally believed to be necessary to return to the soil all the nitrogen which the crops remove. This point will be discussed farther on.

In the "Official Report of the Ohio State Board of Agriculture on Commercial Fertilizers" for 1894, ammonia is valued at seventeen cents per pound, equivalent to twenty and seven-tenths cents for nitrogen, as ammonia is about eighty-two per cent. nitrogen, and available phosphoric acid and potash are valued at six and one-half cents per pound each; these valuations being based upon the average retail price at which these fertilizers are sold in the state. On the basis of these valuations, it would cost over fifty dollars to replace the soil fertility removed by the five-crop rotation described, on the assumption that the nitrogen, phosphoric acid and potash applied in the fertilizers would all be available to crops. Of this amount over thirty-seven dollars would be required for nitrogen, nearly four dollars for phosphoric acid and nine dollars for potash, or about three times as much for nitrogen alone as for both phosphoric acid and potash combined.

Of the various materials used in the compounding of commercial fertilizers, nitrate of soda, dissolved boneblack and muriate of potash are among the most effective carriers of nitrogen, phosphoric acid and potash, respectively. Nitrate of soda can ordinarily be bought at forty dollars to forty-five dollars per ton in New York or Baltimore, equivalent to forty-five dollars to fifty dollars in Ohio, at which price its nitrogen would cost here fourteen and one-half to sixteen cents per pound, equivalent to twelve to thirteen cents for ammonia. Dissolved boneblack may be bought in Cleveland at about sixteen dollars per ton, or eighteen dollars at the average Ohio railway station, equivalent to a little less than six cents per pound for its phosphoric acid. Muriate of potash may be bought in New York or Baltimore at fifty dollars or less per ton, equivalent to less than five and one-half cents per pound for its actual potash, after paying freight to Ohio.

Muriate of potash is the ordinary source of potash in commercial fertilizers, being the cheapest carrier of potash at present prices. Dissolved boneblack is used sparingly, as phosphoric acid may be purchased more cheaply in Carolina or Florida rock. Nitrate of soda is practically never used in the mixed fertilizers ordinarily sold in Ohio, because materials which will show equivalent percentages of nitrogen under chemical analysis may be bought for much less money.

The difference between the cost of these materials and the estimated commercial valuations represents a part of the fertilizer manufacturer's profit. I say a part of that profit, because the prices I have been quoting are retail prices, at which any farmer may buy a single ton or a part of a ton of the materials named, all cost of sacking and freight included. The fertilizer dealers have the advantage of wholesale prices, which are fully twenty per cent. below those I have quoted, and the further advantage of using much cheaper materials than boneblack and nitrate of soda for the basis of their phosphoric acid and potash.

But, as I have stated, we may return to the soil the nitrogen, phosphoric acid and potash, removed by our crops, in the form of nitrate of soda, dissolved boneblack and muriate of potash, at very materially lower cost than we can do so in the ordinary, mixed fertilizers of commerce at their retail prices, and therefore an estimate of the cost of returning all this fertility, based upon the cost of these materials, may be accepted as a very conservative one.

To return the fertility removed by the average crops of the rotation under consideration would require:

1157 pounds nitrate of soda costing.....	\$ 28 92
354 " dissolved boneblack "	3 19
272 " muriate of potash "	7 49
Total cost.....	\$ 39 60

It will be observed that there is a wide margin between the cost of these materials and that of the ordinary mixed fertilizers, as sold in Ohio, but even this cost would consume the greater part of the value of the crops produced, if it were necessary to return to the soil all the nitrogen, phosphoric acid and potash which the crops carry away.

To put the matter in another form: a bushel of wheat, with its straw, saying nothing of the roots and stubble, contains nitrogen to the value of forty-one cents, as ammonia is valued in Ohio fertilizers, and phosphoric acid and potash to the value of ten cents more, so that it is very evident that if we must give the crops enough nitrogen, phosphoric acid and potash to produce any increase in yield, that increase will be very dearly bought, if these materials must be supplied in commercial fertilizers at present prices, even though every particle thus supplied be utilized by the plant, so long as the increase must be sold at present market rates.

In fact, however, no one believes that it is necessary to return to the soil all the nitrogen which the crops have carried away, however it may be with regard to the phosphoric acid and potash; for practical experience and scientific experiment have demonstrated that a considerable amount of nitrogen may be transferred to the soil from the free nitrogen of the atmosphere by the growing of clover and other leguminous crops.

What proportion of the nitrogen supply may be thus secured is not known; nor is it known how much of the phosphoric acid and potash applied in fertilizers are lost to vegetation through conversion into insoluble forms, or by washing out through drainage channels.

It is possible moreover, that some soils may be deficient in only one or two of the three constituents of fertility named, or that different crops may require these constituents in different proportion.

The questions which spring up in the pathway of the student of soil fertility are legion, and it is practically impossible to devise a system of field experiments which would bring satisfactory answers to all of them. It has seemed to us that the questions most urgently pressing for solution in Ohio might be stated as follows:

1. Can either of the three constituents of fertility—nitrogen, phosphoric acid, or potash—be omitted with economy from a fertilizer prepared for Ohio soils?

2. In what ratio to each other can these constituents be most economically used?

3. To what extent can the quantity of nitrogen required be reduced by the culture of clover in rotation with other crops?

4. What are the capacities of the different crops for securing their own supplies of plant food?

5. What proportion of the plant food carried in manure and other fertilizers can be recovered in the crops grown upon them?

6. In what forms may the constituents of fertility be most effectively given? That is, shall we give nitrogen in nitrates, in ammonia salts or in organic nitrogen, and which of the various carriers of phosphoric acid is most effective?

To get answers to these questions a series of field experiments has been put in operation by the Ohio Experiment Station on the following plan:

Nitrogen, phosphoric acid and potash, as carried in nitrate of soda, dissolved

bone black and muriate of potash, are applied singly, by twos and all three together and in varying proportions, on plots of land selected for its natural uniformity, and so treated, by drainage and tillage, as to increase this uniformity to the utmost possible extent, the plots being duplicated on typical soils of different formations, in widely separated regions of the state.

Nitrogen is applied to one plot in quantity sufficient to supply the full requirements of the crops to be grown, and to other plots in smaller quantities.

The cereal crops, corn, oats and wheat, are grown continuously on the same land, both with and without manure and fertilizers, in order to study their feeding habits, while the same crops, with the addition of potatoes, clover and timothy, are grown in several different rotations, in order both to study this question and to learn the limit of possible recovery of plant food applied in fertilizers; and finally, the constituents of fertility are applied in various forms—nitrogen in nitrate of soda, sulphate of ammonia, slaughter house refuse, wheat bran, linseed oil meal and barnyard manure, and phosphoric acid in dissolved bone black, raw bone meal, acid phosphate, basic slag, wheat bran and manure.

This work is now located in four sections of the state, as follows:

1. At the Central Station, at Wooster, on a light, yellow clay or clay loam, lying over Waverly shales. About thirty acres of land are now under experiment here with fertilizers, all being divided into plots containing one-tenth acre each, the plots being sixteen feet wide and separated by vacant spaces two feet wide. Under every second vacant space a tile drain is laid, the drains thus being thirty-six feet apart. They are laid about thirty inches deep.

Two rotations are in progress here, one of the five crops, corn, oats, wheat, clover and timothy, and one of potatoes, wheat and clover, each crop being grown but one year in the rotation. In addition to these rotation experiments, one acre each is devoted to the continuous culture of corn, oats and wheat, both with and without manure. Neither of these rotations has yet been completed, the first having been begun in 1893, the second in 1894.

2. The work on the farm of the Ohio State University, begun by the station in 1881, is still continued under the Station's management, through the coöperation of the Farm Department of the University. In this work about seven acres are used in the continuous culture of corn, oats and wheat, and about three acres in a rotation of these crops with clover and timothy.

The soil here is a heavy clay, the portion devoted to wheat and crop rotation lying upon the impervious Huron shale, while that in continuous culture of oats and corn is underlaid with gravel. The whole tract is plotted and underdrained as at the Central Station, except that the rotation plots contain but one-twentieth acre each.

3. A sub-station for field experiments has been located in Fulton county, near the corners of Lucas and Henry counties, the postoffice being Neapolis, Lucas county. The soil of this sub-station is the barren, yellow sand of the ancient lake beach, and the region in which it is located is celebrated for its sterility, lands being offered for sale as low as five dollars to ten dollars per acre. It is locally known as the "Oak Openings", the timber being a scattering growth of oak. Forty acres of new land have been taken under lease and cleared of timber, and about ten acres divided into plots of one-twentieth acre each, on which a three-crop rotation of potatoes, wheat and clover was begun in 1894.

In this region one of the main problems seems to be to amend the physical condition of the soil, as in its natural condition its fertility leaches rapidly and its loose sands are badly drifted by the wind. When first brought into cultivation the yellow sands of this region produce extremely meagre crops, but when farmed in rotation with clover, and especially if sheep are kept, they improve in productiveness.

This is known as the "Northwestern Sub-station."

4. A "Northeastern Sub-station" has been established in Strongsville township, Cuyahoga county, this being the southwestern township of the county, and near the boundaries of Medina and Lorain counties. The soil here is the heavy white clay which characterizes a large portion of the Western Reserve region—a soil which, in its natural state, is one of the least responsive to culture of any in Ohio. A tract of one hundred acres, lying a mile west of Strongsville village, has been leased and work was begun on it in the spring of 1895. Part of this land is an old field which has not been cultivated for many years, and which was covered with a dense growth of spiked wild oat grass (*danthonia spicata*) locally known as "poverty grass", and considered almost absolutely worthless, either for pasture or hay—a grass which has established the reputation of growing on "hard clay lands where nothing else will." (Report U. S. Department of Agriculture, 1879, p. 355.)

On this section has been established a four-crop rotation, of corn, oats, wheat and clover, while on another part of the tract, which has been in regular cultivation, has been started a three-crop rotation of potatoes, wheat and clover, the first crop on each rotation being grown in 1895. This tract, like those at the Central Station and on the University farm, is being underdrained with tile drains laid thirty-six feet apart and about thirty inches deep.

In all this work, every third plot has been left continuously unfertilized, beginning with the first in each series: that is Nos. 1, 4, 7, 10, 13, 16, 19, 22, etc., have received no fertilizer or manure since the beginning of the experiment, while the remaining plots receive the same treatment every year in the case of crops grown continuously on the same land, or the same treatment for same crops in the case of rotating crops. The average results of this work up to date are given in the following tables.

In these tables dissolved boneblack, which is the standard "superphosphate" used, is valued at eighteen dollars per ton; muriate of potash at fifty-three dollars, and nitrate of soda at forty-seven dollars; these prices include freight to Ohio. These have been used in the average quantity given, and where sulphate of ammonia is used to replace the nitrate of soda, or Carolina rock or basic slag to replace the dissolved boneblack, it has been designed to use them in equivalent quantities of nitrogen, or phosphoric acid.

As the plots receiving these materials are differently numbered in different experiments they have been designated in the tables by the letters A, R, and S, while the letter M, is used to designate the plot receiving barnyard manure.

Plot 12, it will be observed, receives the same quantity of superphosphate and potash as 11, but double the quantity of nitrate of soda. A third plot has had a still larger portion of nitrate; but while the increase from one hundred and sixty pounds to three hundred and twenty pounds has in most cases produced a small increase of crop, when the quantity was still further increased to four hundred and eighty pounds there was generally a reduction of crop in wheat and oats, owing to the lodging of the grain.

FERTILIZERS ON WHEAT.

Table II (see close of article) gives the average results of eleven crops of wheat, seven grown in succession at Columbus, three in rotation in Wayne county, and one after potatoes in Fulton county. There is as yet no very strongly marked difference in the results of the work on wheat in Franklin and Wayne counties. The partial fertilizers give an uncertain increase in both tests, and the complete fertilizers on the five plots, 11, 12, A, R and S, show about a bushel greater increase per acre in Wayne county than in Franklin, when compared with the en-

tire period of seven years successive culture in Franklin, but when compared during the last three years only, the increase at Columbus is about two bushels greater than that at Wooster.

In calculating the cost of increase in this and subsequent tables the increase of the straw or corn fodder is valued at three dollars per ton, and the amount is deducted from the total cost of fertilizer.

It will be observed that the cheapest gain has come from superphosphate alone, but the largest gain from the complete fertilizer. It will also be noted that in no case has the grain been sufficient to pay for the fertilizers, at present prices of grain, straw and fertilizers respectively; but with wheat at one dollar and fifty cents per bushel it would be easy to make money growing it on commercial fertilizers.

In the average of the eleven tests, eight tons of barnyard manure has produced an increase of five bushels of grain and nearly a thousand pounds of straw; but in the continuous work at Columbus the increase has risen, for the last three years, to almost twelve bushels of grain, and to one thousand four hundred pounds of straw. The next largest increase for this period is on plot 12, giving nearly eleven bushels of grain and one thousand four hundred pounds of straw for twelve dollars worth of fertilizer, and plot 11, giving nine and five-tenths bushels of grain and nearly one thousand four hundred pounds of straw for eight dollars and twenty-two cents in fertilizers, this, be it remembered, under continuous cropping with wheat alone.

During the seven years of this experiment we have applied a total of about two hundred and twenty-five pounds of nitrogen, three hundred and fifty pounds of phosphoric acid and four hundred pounds of potash per acre to plot 11. The total increase on this plot has been thirty-eight and two-tenths bushels of wheat and nine thousand nine hundred pounds of straw per acre, which would contain about one hundred and thirteen pounds of nitrogen, thirty-two pounds of phosphoric acid and sixty-five pounds of potash. We have therefore recovered in the increase of crop about half the nitrogen applied in the fertilizer, about one-tenth the phosphoric acid and one-sixth the potash.

It is quite probable that by rotative cropping a much larger proportion of the fertilizing constituents may be recovered in the crop, and that the proportion will increase in the continuous cropping as it is continued longer.

FERTILIZERS ON CORN.

Table III (see close of article) exhibits the average gain from the use of fertilizers on corn, the table averaging the results of eight year's continuous cropping at Columbus, four crops grown in rotation at Wooster, and one crop grown on old sod at Strongsville.

The statistics of the separate experiments indicate that nitrogen has been the controlling factor in producing the increase at Columbus, and phosphoric acid at Wooster; but in both places the increase has been larger and more uniform when both nitrogen and phosphoric acid were combined, and this is also true of the Strongsville test.

It will be observed that in the case of corn, as well as in that of wheat, the cost of the fertilizer, even under the most favorable conditions, has been greater than the value of the increase in the crop to which it was applied.

FERTILIZERS ON OATS.

Table IV (see close of article) shows the average increase of seven crops of oats grown in succession at Columbus and two crops grown in rotation at Wooster.

The results of the work on oats are very similar to those on corn. Phosphoric acid seems to have been the controlling factor in producing increase at Wooster and nitrogen at Columbus.

In other words, phosphoric acid seems to produce a greater relative effect on fresh land and nitrogen on land that has been partially exhausted by continuous cropping in a single crop. With oats, as with corn and wheat, the complete fertilizer has produced a larger and more regular increase, but the difference has not been proportionate to the increased cost of the fertilizer.

This point is illustrated by Table V, (see close of article) which gives the increase in the two sets of experiments separately. Attention is called to the relatively small yield of plots two and eight in Franklin county and of plots five and nine in Wayne county. The corn yield in Wayne, it will be observed, is very small, owing to a succession of unfavorable seasons. It should also be stated that the quantity of superphosphate used in Wayne county on corn and oats is only one-fourth that used on the same crops at Columbus.

On the University farm, the area of land suited to this work was limited to about ten acres, an area altogether insufficient for the study of all the various problems concerned, so it was only attempted there to learn whether phosphoric acid and potash were needed at all on that soil, without regard to the quantity of each which might be most economically used. In the case of nitrogen, the inquiry was carried a step further, and phosphoric acid and potash were used in excessive quantities, in order that the larger quantities of nitrogen applied might find a full sufficiency of the other two constituents for its full utilization.

FERTILIZERS ON POTATOES.

Table VI (see close of article) gives the increase from fertilizers on five crops of potatoes, two grown at the Central Station in 1894 and 1895, two at the North-Western Sub-Station the same seasons, and one grown at the North-Eastern Sub-Station in 1895. The results for the two seasons in Wayne and Fulton counties have been averaged, as also those for the five crops. It will be observed that plot 15 in the potato work is being fertilized at a higher rate than any of those in the cereal work, the total quantity reaching one thousand one hundred pounds and costing over twenty-one dollars. At thirty cents per bushel for potatoes this high fertilizing has resulted in loss, in the average crop, but at sixty cents it returned nearly as much clear money as any other plot in the series, and more than the majority. In the first experiment in Wayne county, this plot gave more clear money at sixty cents per bushel, than any other one, and in the average of the two years' tests it is only excelled by No. 12 in this respect.

It will be observed that the total increase is considerably larger on the average yield of one hundred and twelve bushels in Wayne county than on the much smaller yields in Fulton and Cuyahoga, and that the controlling factor in producing this increase seems to be phosphoric acid, but attention is called to the difference in yield between plots 11 and 12, where the only difference in fertilizing has been an increase in the nitrogen supply on plot 12. It will be seen that in each of these tests plot 12 shows a marked increase over plot 11.

In the test in Fulton county the yields for plots A, R, and S are given for 1895 only.

GENERAL SUMMARY.

Table VII (see close of article) gives in one view the average increase thus far obtained on the different crops; that is, on thirteen crops of corn, nine of oats, eleven of wheat and five of potatoes, the object being to show the general uniformity of increase on plots similarly treated.

It will be observed that the first completely fertilized plot No. 11, shows more than twice as great an increase of corn and wheat, and nearly twice as great of oats, as any plot fertilized with only one of the three chief constituents of fertility, and that its increase is likewise much larger than that on any plot receiving two of these constituents except No. 6, fertilized with nitrogen and phosphoric acid. In corn and oats this plot shows almost as great an increase as No. 11, but in wheat the potash seems to have been necessary to give a full yield, and on potatoes superphosphate appears to have been the chief factor in producing an increase of crop. The additional quantity of nitrogen on plot 12 has not materially affected the cereal crops, but seems to have produced a marked increase of potatoes, and it seems to have made but little difference whether the nitrogen came from nitrate of soda or sulphate of ammonia, or the phosphoric acid from bone superphosphate, rock superphosphate or basic slag, except in the case of potatoes, where the sulphate of ammonia seems to be ahead and the basic slag behind.

In the general average, the increase from barnyard manure is a little lower than from the standard complete chemical fertilizer on corn and wheat, about the same on potatoes and about half as great on oats. Eight tons of barnyard manure should contain about the same quantity of phosphoric acid and potash used on plot 12 in the continuous cropping, but considerably more nitrogen.

CONCLUSIONS.

Our experiments seem to show conclusively that for each of the widely different soils on which they have been conducted, it is as necessary to return nitrogen to the soil for the production of the maximum crop as either phosphoric acid or potash.

While we have used nitrogen in relatively large ratio to phosphoric acid, as compared with the ordinary practice of farmers who use commercial fertilizers, our experiments give no encouragement to believe that the proportion of nitrogen could have been materially reduced without reduction of crop.

Whether, by the culture of clover, we may dispense with purchased nitrogen and at the same time, temporarily at least, reduce the quantity of phosphoric acid and potash required, our experiments do not yet tell, as a longer time than we have yet had is necessary to bring out this point. From our general knowledge of the effect of clover culture on the soil, however, it is safe to assume that it will have a considerable tendency in this direction.

At the prevailing prices of commercial fertilizers and cereal grains, respectively, we have not succeeded in using commercial fertilizers in such manner as to recover the cost of the fertilizer in the cereal crop to which it was applied; but in the case of potatoes—a crop of much higher value per acre, and apparently demanding nitrogen in smaller proportion than the cereal grains,—it has been comparatively easy to use fertilizers with profit.

We have thus far produced about half as great an increase of crop from barnyard manure, in proportion to the nitrogen, phosphoric acid and potash contained, as from the same quantity of these substances in form of commercial fertilizers. If the fertilizing constituents of barnyard manure were valued at the rate at which they are retailed in commercial fertilizers in Ohio, it would be worth about three dollars per ton when delivered on the field, or about two dollars and fifty cents if valued at the rates used in this report, or about two dollars if valued at the rates at which fertilizing materials may be bought at wholesale.

We have as yet no data from our own experiments concerning the residual effect of either manure or fertilizers.

Finally, since barnyard manure contains nitrogen and phosphoric acid in the ratio of about two to one, and since our experiments, made on comparatively

unexhausted soils, indicate that a ratio of one to one produces almost the maximum crop, they would seem to suggest the most careful saving of barnyard manure, supplementing it with the cheapest forms of phosphoric acid, and using the two thus combined with special reference to the greatest possible development of clover.

TABLE I.—AVERAGE CROPS AND CONSTITUENTS OF FERTILITY CONTAINED.

Crop.	Average Yield Per Acre.	Constituents Per Acre.		
		Nitrogen.	Phosphoric Acid.	Potash.
		POUNDS.	POUNDS.	POUNDS.
Corn.....	33.4 bushels.	51.1	18.4	30.0
Oats.....	28.8 "	31.4	11.5	31.7
Wheat.....	13.7 "	28.4	9.0	12.5
Clover.....	1,960 pounds.	40.6	7.5	43.1
Timothy.....	2,388 "	30.1	12.7	21.5
Total of five crops.....		181.6	59.1	138.8

TABLE II.—FERTILIZERS ON WHEAT—AVERAGE OF ELEVEN CROPS.

Plot No.	Fertilizer.	Cost of Fertilizer.	Increase Per Acre.		Cost of Increase Per Acre.
			Grain.	Straw.	
			BUSHELS.	POUNDS.	
2	Superphosphate, 260 lbs.....	\$ 2.34	2.44	463	\$ 0.67
3	Muriate of potash, 80 lbs.....	2.12	1.55	40	1.33
5	Nitrate of soda, 160 lbs.....	3.76	1.34	141	2.65
6	Superphosphate and nitrate.....	6.10	2.83	585	1.84
8	Superphosphate and potash.....	4.46	3.55	496	1.04
9	Potash and nitrate.....	5.88	2.93	434	1.78
11	Superphosphate, potash and nitrate, 160.....	8.22	5.82	1,159	1.11
12	Superphosphate, potash and nitrate, 320.....	11.98	6.65	1,245	1.52
A.	Superphosphate, potash and sulphate ammonia.....	8.66	5.34	794	1.40
R.	Rock phosphate, potash and nitrate.....	7.60	4.34	695	1.51
S.	Slag phosphate, potash and nitrate.....	8.64	5.41	832	1.18
M.	Barnyard manure, 8 tons.....	....	5.02	964	....

TABLE III.—FERTILIZERS ON CORN—AVERAGE OF THIRTEEN CROPS.

Plot No.	Fertilizer.	Cost of Fertilizer Per Acre.	Increase Per Acre.		Cost of Increase Per Bush.
			Grain.	Straw.	
			BUSHELS.	POUNDS.	
2	Superphosphate, 228 lbs	\$ 2 05	1.47	126	\$ 1 26
3	Muriate of potash, 80 lbs	2 12	1.02	281	1 67
5	Nitrate of soda, 160 lbs	3 76	2.41	384	1 32
6	Superphosphate and nitrate	5 81	5.16	352	1 02
8	Superphosphate and potash	4 17	4.26	266	89
9	Potash and nitrate	5 88	2.08	361	2 57
11	Superphosphate, potash and nitrate, 160	7 93	5.70	354	1 30
12	Superphosphate, potash and nitrate, 320	11 69	5.44	370	2 05
A.	Superphosphate, potash and sulphate ammonia	7 93	4.53	224	1 68
R.	Rock phosphate, potash and nitrate	7 56	6.03	533	1 12
S.	Slag phosphate, potash and nitrate	8 33	5.43	383	1 43
M.	Barnyard manure, 8 tons .....	....	4.58	228	....

TABLE IV.—FERTILIZERS ON OATS—AVERAGE OF NINE CROPS.

Plot.	Fertilizer.	Cost of Fertilizer Per Acre.	Increase Per Acre.		Cost of Increase Per Bush.
			Grain.	Straw.	
			BUSHELS.	POUNDS.	
2	Superphosphate, 260 lbs	\$ 2 34	2.66	223	\$ 0 73
3	Muriate of potash, 80 lbs	2 12	3.87	176	48
5	Nitrate of soda, 160 lbs	3 76	3.89	249	87
6	Superphosphate and nitrate	6 10	6.27	332	90
8	Superphosphate and potash	4 46	3.44	170	1 22
9	Potash and nitrate	5 88	3.70	225	1 50
11	Superphosphate, potash and nitrate, 160	8 22	6.30	327	1 23
12	Superphosphate, potash and nitrate, 320	11 98	6 56	453	1 72
A.	Superphosphate, potash and sulphate ammonia	8 22	6.04	448	1 23
R.	Rock phosphate, potash and nitrate	7 87	6.32	440	1 14
S.	Slag phosphate, potash and nitrate	8 64	5.13	325	1 59
M.	Barnyard manure, 8 tons .....	....	3.04	308	....

TABLE V.—FERTILIZERS ON CORN AND OATS—COMPARISON OF FRANKLIN AND WAYNE COUNTY CROPS—INCREASE PER ACRE.

Plot.	Fertilizer.	Franklin County.		Wayne County.	
		Corn. Eight Crops Continuous.	Oats. Seven Crops Continuous.	Corn. Three Crops Rotative.	Oats. Two Crops Rotative.
		BUSHELS.	BUSHELS.	BUSHELS.	BUSHELS.
2	Superphosphate	—0.1	—0.4	4.5	4.8
3	Muriate of potash	0.7	5.1	1.4	—0.1
5	Nitrate of soda	3.1	4.4	1.4	2.1
6	Superphosphate and nitrate	4.9	6.0	5.4	7.3
8	Superphosphate and potash	2.4	2.3	8.1	7.5
9	Potash and nitrate	6.1	4.9	0.2	0.6
11	Superphosphate, potash and ni- trate, 160	4.6	5.1	6.0	10.5
12	Superphosphate, potash and ni- trate, 320	4.4	5.0	7.7	10.3
A.	Superphosphate, potash and sul- phate ammonia	3.4	5.8	6.3	6.9
R.	Rock phosphate, potash and nitrate	7.1	6.7	3.8	5.1
S.	Slag phosphate, potash and nitrate	6.5	6.2	3.1	4.5
M.	Barnyard manure	4.8	3.2	1.4	4.0
	Average for complete fertilizers	5.2	6.4	5.4	7.5
	Average unfertilized yield	53.0	33.2	25.2	53.2

TABLE VI.—FERTILIZERS ON POTATOES—AVERAGE OF FIVE CROPS—INCREASE IN BUSHELS PER ACRE.

Plot.	Fertilizer.	Station.			Average.	Cost of Increase Per Bush.
		Central.	N. W.	N. E.		
2	Superphosphate, 160 lbs	28.5	8.6	16.7	18.2	8.0
3	Muriate of potash, 100 lbs	4.0	23.4	....	11.0	24.1
5	Nitrate of soda, 80 lbs	0.5	6.0	6.1	3.8	49.5
6	Superphosphate and nitrate	29.4	14.4	13.7	20.3	16.3
8	Superphosphate and potash	36.1	11.0	21.2	23.1	17.7
9	Potash and nitrate	19.4	11.6	....	12.4	36.5
11	Superphosphate 160, potash 100, and nitrate 80	31.2	20.8	5.0	22.4	26.6
12	Superphosphate, potash and ni- trate, 160	51.3	24.5	31.6	36.6	21.5
14	Superphosphate 320, potash 200, and nitrate 160	56.2	29.8	19.9	38.4	34.8
15	Superphosphate 480, potash 300, and nitrate 320	66.1	36.8	45.6	50.3	42.2
A.	Superphosphate, potash and sul- phate ammonia	47.7	15.0	31.5	31.4	19.0
R.	Rock phosphate, potash and nitrate	31.3	24.9	18.2	26.1	22.2
S.	Slag phosphate, potash and nitrate	23.0	11.7	13.6	20.6	....
M.	Barnyard manure, 8 tons	28.3	...	23.0	....	....
	Average unfertilized yield	112.4	71.2	59.8	....	....

TABLE VII—AVERAGE INCREASE FROM FERTILIZERS. INCREASE OF GRAIN AND POTATOES IN BUSHELS PER ACRE.

Plot.	Fertilizer.	Wheat. Eleven Crops.	Corn. Thirteen Crops.	Oats. Nine Crops.	Potatoes. Five Crops.
2	Superphosphate.....	2.4	1.5	2.7	18.2
3	Muriate of potash.....	1.6	1.0	3.9	11.0
5	Nitrate of soda.....	1.3	2.4	3.9	4.8
6	Superphosphate and nitrate..	2.8	5.2	6.3	21.4
8	Superphosphate and potash.....	3.6	4.3	3.4	23.1
9	Potash and nitrate.....	2.9	2.1	3.2	13.6
11	Superphosphate, potash and nitrate	5.8	5.7	6.3	21.0
12	Superphosphate, potash and nitrate	6.6	5.4	6.6	30.2
A.	Superphos., potash and sulph. ammonia.....	5.3	4.5	6.0	29.4
R.	Rock phosphate, potash and nitrate	4.3	6.0	6.3	20.2
S.	Slag phosphate, potash and nitrate.	5.4	5.4	5.1	11.3
M.	Barnyard manure.....	5.0	4.6	3.0	20.2

President Agee: I have asked no one to open the discussion on this address, supposing that you would probably wish to ask Director Thorne some questions. We have a little time to consume in that way.

Mr. J. P. North: Residing in a county that uses a great deal of commercial fertilizer I am anxious to ask this one question of the professor. We have a diversity of soil there; sandy, gravelly, clay loam and a clear clay soil. Our experience there has been that upon this clay soil it paid well to apply commercial fertilizer. I would like to ask the professor if it would be just as satisfactory on these other soils, there in Cuyahoga county, where I live?

Professor Thorne: These experiments include, as I said at the outset, seven years' work, made on a tract of very tough clay lying here at the door, one year's work on the sandy soil in Fulton county and one year's work on the still tougher hard clay in Cuyahoga county. The results thus far are not materially different. We have not gone far enough with the work on the other farms to justify an assertion one way or the other as to the worth of it for the different soils. We have always been able to produce an increase of crops by the use of fertilizers; and last year the unfertilized yield was less than three bushels per acre on the clay land in one of our tests, and the fertilized yield was ten to twelve more. And on another tract in Wayne county, where the unfertilized yield was eight bushels per acre, the increased yield was from twelve to fifteen bushels per acre. And so we have gone over soils of different character, and thus far our results show that we can get a large increase in the crop on which fertilizer is applied, but not a sufficient increase in that crop alone to justify

us. We have been examining the effect of fertilizer upon subsequent crops, and we expect to find a very considerable increase in subsequent crops, but thus far the increase has not been satisfactory.

I want to make another statement. We are trying in Wayne, Fulton and Cuyahoga counties three experiments, one in each of these counties, in short rotation of three crops, potatoes, wheat and clover. In Wayne and Fulton counties we have grown two crops in that rotation, potatoes and wheat. We applied the fertilizer to the potatoes in the quantity of eleven hundred pounds to the acre, an experimental application, and the result was that last year we harvested more clear money than we did from any smaller quantity on a potato crop. This year the clear money was not quite so great. On this plot we applied no fertilizer for the wheat, and we also had one of the largest increases in the wheat crop, so we are getting a secondary effect from the use of the fertilizer on potatoes. From our experiments, we should apply fertilizer with a most liberal hand to the potatoes, let the wheat follow the potatoes, get what it could and the clover follow the wheat.

A Delegate: I would like to ask if the eight tons of manure that shows that increase was what we, as farmers, commonly term barn-yard manures?

Director Thorne: This eight tons of manure was barn-yard manure, not stable manure, after it had lain out in the yard during the summer months, and it was applied to each crop grown in succession, one after the other, but we have not gone far enough to get any results from the manure. In our own work, I would say we have not got to that point where the increase from the manure on wheat seems to be relatively any faster than the increase from the commercial fertilizer.

President Agee: The next number upon the program is a paper by Mr. H. P. Miller, of Sunbury, Ohio, entitled "Growing Mutton."

ADDRESS BY MR. H. P. MILLER.

The production of mutton is as yet only a partially developed feature of the sheep industry in this country. It has not received as much study and attention as most other branches of stock growing. The American sheep literally had the wool pulled over its eyes and over other parts of the body as well until the sheep itself was lost sight of. The decline in the price of wool marked the rise of mutton production, through importations of the English mutton-breeds and through the transformation of some merino families into a combination sheep.

The production of mutton in years past lacked the encouragement of a strong demand. Americans could not be said to be a mutton eating people. But the steadily increasing amount of mutton consumed in this country during the past few years, under as steadily decreasing ability to buy, is evidence that Americans are learning to eat mutton. I believe it no mere fancy to say that when a family has once suppressed the prejudice against mutton and learned of its finer tissue and sweeter flavor that it will be used as a staple meat.

I count it a highly significant fact that during the past year, under the heaviest marketing of sheep ever known and in the face of steady depreciation in the value

of cattle, hogs and corn, sheep have maintained their market value. Under this constantly increasing demand and decreasing supply it does not appear to me to be assuming the role of a prophet to say that there will soon be a call for sheep to which there will be no sheep to respond.

Much can be done to encourage the consumption of mutton by sending younger animals to market. The difference between lamb and mutton is as great as that between spring chicken and three year old rooster. The younger the animal also the less shrinkage in slaughtering. Fortunately, moreover, early marketing is the most profitable for the producer. Careful experiments prove that the cost of gain almost constantly and regularly increases with age. The very cheapest gain is made while a lamb is yet with its mother. It is a growth moreover which if lost can not be regained by any amount of feeding later in life. The first two months of a lamb's life very largely makes or mars it for a profitable producer of mutton.

There are not many people who will admit that they are superstitious, yet most of us prefer seeing the new moon over the right shoulder rather than the left. A remnant of the superstition of our grand-parents remains with us in spite of ourselves. So with the raising of sheep, not many will admit a belief in the value of the toughening process which consists in exposure and subjection to coarse, scanty diet, yet in practice many really do hope that in some inexplicable way such treatment will be profitable. Growers of hogs far more generally than keepers of sheep have learned that withholding of feed is not economy.

I have one neighbor who keeps his hogs to the age of sixteen or eighteen months. For the first half of that period he "just feeds them along", to use his own phrase. His idea seems to be that the more air and water he can get them to appropriate the less corn it will take to produce a given weight. I am not going to presume to tell how pigs should be fed, but this neighbor says there is no money in farming. So I have learned one way *not* to do it. But are there not a good many men keeping sheep who "just feed them along", that is, give them as little as possible to keep the pelt buyers away from the farm?

The idea must be entirely eradicated that the life principle itself can produce growth. It can not. Indeed it is not self-sustaining. It can only transform suitable material that is brought under its activity. Whether it is sound science or not it would be well for the stock industry to teach that *life itself* is the result of the combination of food material.

There is a limited period in the life of animals for growth. Every factor in the problem of producing mutton points toward earlier marketing. To paraphrase a familiar adage, it is the early lamb that gets the prize.

An eight weeks old lamb, if in condition and in "season", commands the highest price per pound ever obtainable. A very narrow limit of time at this period and the height of the tide in prices passes. A lamb not meeting the requirements of the market at that period must pass on into a cheaper class, not to find sale until another "season" opens which calls for a lamb three to five months old, but at a less price per pound.

The lambs sold at four months of age do not as a rule bring as much as those sold at two months old. If again the age is doubled or trebled the market into which they must go is such that in spite of their gain in size they will bring little if any more per head than at either of the former periods. This may be continued until we have the mature sheep at its maximum weight and the price per head does not vary greatly.

There is an impressive lesson in this that has not found general application in the growing of mutton. The lesson is not however that all mutton should be marketed in the form of eight weeks old lambs. Not all sheep raisers are rightly situated respecting market, or equipped in skill or stable accommodations for pro-

ducing this class of mutton. But this teaching is of general application that the younger a sheep can be marketed when grown under the most economical conditions for meeting a certain market in choice form, the larger will be the profit. To illustrate again by my neighbor's hogs. He "feeds them along" through one winter, past a June market on until the next winter market and he says that don't pay. I have thought that if I were to raise pork I would never go into the hog business, I should go into the *pig* business. Something similar to this is what men must do who find that sheep don't pay. Stop raising sheep and go to raising lambs.

There are five periods in the lives of sheep at which they may be marketed. Not five periods in the life of one sheep. There is but one chance for each individual.

What I proposed for this paper was a brief discussion of the conditions and methods under which each of these classes of mutton can be grown most profitably. Taking them in the order of their relative profitableness I shall speak of the youngest first. This is what is known as hot house lambs, and perhaps the name is fortunate as a trade mark to help enhance their value. They must be grown in winter, but it is not necessary or even advisable to have their stable artificially heated. If a lamb can attain to the age of twenty-four hours without becoming chilled and can thereafter be kept dry and out of currents of air a very low temperature will not affect it. But, as these lambs must be yeaned in December and January no one can hope to make this branch of mutton growing successful who has not first of all warm stables; that is, such as can be closed against all currents of air. Not that they should be so kept but that they may be so closed on the approach of a cold wave. The stable must have a southern exposure for the admission of the direct rays of the sun. The larger the window space on this side the better. Doubling the glass by screwing two sashes together will greatly aid in keeping the stable warm.

Provision must be made for feeding and watering the ewes in the stable that it may not be necessary to remove them after the lambs are yeaned. Either roots or ensilage must be provided for most satisfactory results. Bran slop fed warm and oil meal will in a measure take the place of these but the most successful winter lamb raisers strongly recommend roots or ensilage. There is not universal agreement as to which is better for this purpose. Even with these bran should not be omitted from the list of feeds. There is perhaps no other winter feed that is as great a milk producer. Clover hay is the other indispensable. There is no rigid rule about mixing feeds. The lambs must have an apartment accessible to themselves *only* in which feed must be constantly kept. This should comprise clover hay, corn meal, bran and oil meal.

The ewes selected for this work should be such as have raised one lamb or more. It is difficult to make young ewes with their first lambs give a sufficient quantity of milk for the best results. Ewes to be bred so early as June must have gone barren the previous year or had their lambs removed as early as May. Not all ewes can be induced to breed at this season but a large per cent. of a flock can by skilful handling. They must be given care upon which they will improve. It is not the ewe that is fat that is the most certain to breed but the one that is *getting* fat.

Of the breeds I presume the Dorsets rightly hold the first rank as early lamb raisers. Following them I think ewes having a controlling per cent. of Merino blood will be found satisfactory. The ram should be of some middle wool breed. Butchers generally praise the Shropshire, but they do not distinguish the Down breeds. All with black faces and legs pass as Shropshires.

Next to producing breeding stock and fitting show animals the growing and marketing of winter lambs requires the highest skill in a flock-master. It is a

branch of the industry with a limited market but from the fact that not many will venture into it and not all who do will succeed it is likely to remain the most profitable for the few who do command success. Moreover it is not a branch of work that can be carried on very extensively by any one man. The stable room required will not permit it. In the average flock not all ewes will breed to yearn at the proper time.

I believe it practical to raise three crops of lambs on the same farm in one year.

Have a portion of the ewes yearn in December and January. Their lambs should all be sold by the middle of March when their stable room could be given to a second portion of the ewes for yearning, their lambs to be sold in May and June. The third portion of ewes I would have yearn the first few days of May, or preferably the first two weeks of pleasant weather. This of course will vary in different latitudes.

No rigid rule can be given for the division of ewes for these different classes of lambs. I should not under present prices of wool carry a barren ewe through from one year to the next. Every sheep on the farm should produce mutton during the whole period of its stay on the farm, either on its own frame or through offspring.

Take this as the outline plan of management. Let the ewes drop their first lambs after warm weather and grass have come in the spring. Grass is the best milk producer and young ewes need it to enable them to nourish their lambs satisfactorily. An equally patent reason for this rule is that lambs yearned at that time can be grown more cheaply than at any other month of the year. Ewes yearning while on dry feed must have their feed practically doubled. From these late yearned lambs I would renew the breeding flock for I believe it will be much more satisfactory for many reasons to grow one's own ewes. These lambs, of course, should be of the breed desired in the permanent flock, and for them I should use a mature ram. The male lambs of this crop may be sent to the mutton market at ten or twelve months of age, that is shortly before or after shearing, as circumstances may determine best. With wool at present prices it will not pay to shear them only for the rapid gain they will make during the two or three weeks following, under favorable conditions. If Merinos, they will sell better when shorn than in full fleece.

Whether to breed the ewes for a second crop of ewe lambs or not should be determined by the need of more ewes. Under a well established flock on this plan two crops of lambs of this class would be required to keep up the number of the entire flock. The second or third crop of lambs from any class of ewes I should have yearned in March. They should be for mutton purposes exclusively, bred from an immature ram of a millde-wool breed and be forced to most rapid growth until sold not later than the middle of June. During the month of July the ewes may be again bred for a crop of winter lambs which should be their last. A ram lamb should be used for this class also.

By this time the ewes will have attained their maximum growth and have passed their greatest wool production. The high feeding necessary to induce the desired growth in their lambs puts them into condition from which they may be quickly fitted for the mutton market. The deviation to be made from this general course for managing the ewes is in the case of the few ewes of such marked excellence that it is desirable to keep them producing breeding stock for the improvement of the flock. It is by retaining such ewes that improvement is to be made.

The age at which a ewe should drop her first lamb depends somewhat upon the breed, but more upon the care she has been given. When they have been pushed to rapid maturity ewes may raise a lamb at two years of age. But they

should be fed so as to continue to grow during their third and fourth years, which they *will* do after this temporary check. With Merino ewes I should let the price of wool in some measure determine the age at which to breed them. If the wool will approximately pay for their keeping I prefer they should not raise a lamb until three years old. Raising a lamb will reduce the fleece twenty per cent. in weight and the possible carcass weight about ten per cent. Hence a lamb raised before the ewe is mature is not entire gain. With her first lamb at three years of age a ewe may raise four lambs and be put upon the market herself fat at six years of age.

In the method I have thus briefly outlined all animals are kept the shortest possible time in which they may be put upon a paying market. Thus a much larger number of sheep may be kept on any definite area and with the same stable accommodations. One crop of lambs is out of the way before the next needs their room. One hundred and fifty ewes kept under this system, allowing for an increase of one hundred per cent. in the offspring, would permit sales to that number each year while retaining the number of the breeding flock. The number of fleeces to be clipped each year would be from two hundred and fifty to two hundred and sixty-five.

This number ought to be kept on the average one hundred-acre farm of Ohio, besides a team and two cows. Under a conservative calculation the sales should amount to seven hundred and fifty dollars or above for each year. This should be a practically net income as one energetic able-bodied man can easily provide the necessary feed, and care for that number. This I think will compare not unfavorably with the incomes from average one hundred-acre farms of the state managed along other lines.

Not much is to be said in regard to feed. We have more to learn in methods of feeding than in the growing of new food products, but we shall probably do well to imitate our Canadian neighbors in the growing of more root and forage crops.

President Agee: We are fortunate this afternoon in having with us Professor McKerrow, superintendent of Farmers' Institutes of Wisconsin. We have prevailed upon him to open the discussion of this subject. We will now hear from him.

Professor McKerrow: Ladies and gentlemen, the paper just read sounds a good deal like a Wisconsin paper because it is a good one (laughter), yet there are one or two points upon which I would beg leave to differ with the gentleman in the matter of sheep husbandry. In the first place, let me emphasize some of the good points, the strong points, of his paper, the one especially wherein he recommends to flockmasters of Ohio to sell all the surplus product of the flock so far as possible, in the lamb form; and he gave you a reason for this which I also want to emphasize, that is, that more mutton would be consumed if we put it all or nearly all upon the market in the lamb form; for customers who buy lambs, if they get the genuine, good, *down* lambs will go back and buy more, but if they get it not from the three-year-old, but from the eight or ten-year-old matrons or patriarchs of the flock, they will not go back for a new supply. Another thing I want to emphasize is the feeding of the animal to keep up the normal weight and keep up and run the machinery of life. It has been practically demonstrated, by actual experiments at the

experiment stations and by the results of the feeders who have shown the records at our fat stock shows, that the young and growing animal produces its meat a great deal the cheapest. It has been found that the feed which barely supports a two hundred-pound pig and keeps him alive at two hundred pounds, if fed to a one hundred-pound pig will give a nice profit from it until that pig gets up pretty well along the road to the two hundred-pound mark. When fed to a one hundred-pound pig he gets a good, steady gain and makes a profit.

Now, the same thing, as I have said before, has been demonstrated in regard to the lamb and steer. So long as we feed our feed to the lambs we get the greatest return for it, not only in the matter of feeding less, but because in the average young and growing animal the digestion is better. Nature has provided for a rapid growth and therefore given an active digestion to the young animal and therefore he gets a greater per cent. of good out of his food than does the older animal.

Another point. In Wisconsin, if we send a carload of lambs to market, and upon the same train send a car load of yearlings or two-year-olds equally as fat, and the flesh beneath the wool is equally good, the returns invariably show a half cent to a cent a pound in favor of the lambs. Therefore you see the gains are threefold. You get more gain for the amount of food consumed and then a greater price for that gain. Therefore, my friend's advice is pertinent when he says, keep the lamb growing from the day he is born until you put him upon the market. Our experiments at Madison, Wisconsin, in comparison with lambs that are not fed grain show that in every case the grain-fed lambs from the start are the ones that make their mutton cheapest, and their mutton is the best.

Now, to do this, it requires a variety and plenty of feed to be supplied and of the proper kind, which requires to be looked after in winter as well as summer. Then again, the lambs should have more or less care all the time, but special care when the lamb crop is coming, to see that every young lamb gets a fair start in life. It is well sometimes to place a few pens around lambs and their mothers until the lambs become well acquainted with the ways of the world. Then occasionally you will have a ewe that does not own her lamb, and you will wish to foster the lamb upon its stepmother. To do this successfully, if you have a lamb the best and easiest way is to skin the dead lamb and use that skin for an overcoat for the new lamb, and in many cases it will work very well. But occasionally you cannot fool her. She will say, "No, I am just as smart as you are." Then separate them from the flock, see that the lamb gets nourishment every hour or two, and then in twelve or twenty-four hours take your shepherd dog, and you will find that that will almost always raise the maternal instinct and cause the ewe to own the lamb. I never was beaten except in one case and in that instance she said, "No, I—never—will—be—a—step-mother!!"—this was the sheep, I mean. (Great laughter and continued applause.)

Now, there is another agreeable time in the life of a flockmaster in raising lambs, and that is the shearing time. Then cull out all the inferior ewes in your flock. You can tell which ewes are raising poor lambs. Then at that time, or from seven to ten days after the ewes are shorn every lamb ought to be dipped. The ticks have then left the bare bodies of the sheep and have sought shelter in the soft wool of the lambs, and you will practically kill all the ticks.

One point I wish to differ from my friend in; as I understood him, he recommends for two years in succession saving the crop of ewe lambs and then selling the third crop of lambs entire. Is that correct Mr. Miller?

Mr. Miller: Yes sir.

Professor McKerrow: I believe we ought to save the best ewe lambs every year. I believe that the flockmaster ought to be just as careful in the selection, breeding and rearing of ewes to produce the lambs, as the dairyman should be in raising the dairy cow to get a good supply of milk and butter, and as all of the ewes in one flock cannot be first-rate, therefore part of your ewes are not fit to raise ewe lambs from to continue in your flock. Therefore I would select every year the best ewe lambs from the best mothers to be continued in the flock, and then, as I say, cull out the inferior ewes each year and in that way your flock is continually growing better.

Just a word in regard to profits before I close. I know farmers who have been making as much out of sheep husbandry during the past two or three years as they have been out of any other line, and they are good farmers too, men who make the most out of all lines. I know others who are failing right along. They have done their breeding haphazard and their feeding has been haphazard, and they sell their lambs at one dollar and seventy-five cents apiece, while their neighbors put the very best sires at the head of their flocks, sires that have their mutton points well developed, sires with broad backs and full thighs, so that when they put feed into them those high-priced points are developed, and when those lambs go into market, the butcher says, "Here is a lamb that will cut up a very large percentage of high-priced cuts. I can get a high percentage of cuts out of that lamb that will bring from twelve cents to twenty cents a pound, instead of a large percentage of cheap cuts that bring from five to seven cents a pound."

I am pleased to say that while I was at the New York fat stock show a few years ago I saw some very good sheep from the State of Ohio. I saw a car load of wethers down there and a goodly portion of those wethers sold for eight cents a pound by weight. I saw right beside those wethers our neighbors, from over in Canada, sell their wethers at eight cents a pound, which I thought scored one for Ohio. Ohio mutton is just as good in New York as Canadian mutton. Now, the Canadians had shipped over seven hundred lambs into those Eastern cities and paid a duty on them. I have been on the farms of these

Canadians and they have told me that it was paying them better than any other line of their farming in Canada. I give you this secret for what it is worth. The point I wish to make is that Ohio can produce mutton, send to New York market and sell just as high as these Canadian gentlemen.

President Agee: Permit me to say that we have a Governor with us this evening at our lunch. We do not often have an opportunity to lunch with a Governor, and therefore, as you will want to stay to that banquet, we are in no hurry to get through this afternoon. Can we not have three-minute talks on this subject?

Mr. Phelps: I want to make one point. I have been a breeder of fine stock. Poland China hogs and the Southdown sheep, and I have found that a majority of farmers when they want to buy something to head their herds look for something that they can buy for little money. They pass right by some of the best breeders of sheep and hogs and buy some inferior animals at a lower price, thinking they save some money, but there is just where our farmers make a great mistake. They will never improve their flock or herd by this means. I have known men who have branched out in this line of keeping the best stock to sell for breeding purposes they could find, paying high prices for it, but they have been forced out of the business, from the fact that they could not get any more for their younger stock for breeding purposes than they could sell it for feeding purposes. Often I have sold pigs from the same litter and lambs of the same ages for pork or mutton for more money than it would sell for stock purposes.

Mr. H. P. Miller: Just allow me to give my reason for selling the third and fourth crops of lambs entirely. The fact that I had in mind is that they would be cross-bred, and that class of sheep I would never keep for breeding purposes.

Here President Agee introduced Dr. W. O. Thompson, president of Miami University, who addressed the association upon the subject of "Transportation," as follows:

ADDRESS BY W. O. THOMPSON.

If one of the inhabitants in the "Good old times when our Fathers were under the King," had been dropped down in the Transportation building at the World's Fair, in the presence of any one of us, it would have been a question which would have shown the greater surprise,—he at the building and its contents, or we at his surprise, so accustomed have we become to the excellent facilities of our day. From the rudest samples of other days to the splendidly furnished products of ours is a long step in advance. The palace car, the locomotive—that triumph of modern genius,—or the elegant and commodious steamship, the combination of both, these are but examples of the equipments with which modern society is favored. They speak of speed, safety, and comfort.

It is a matter of history that the preliminary articles of peace with Great Britain were signed at Paris, January 20, 1783. On March 23, almost sixty days later, the news arrived in America, and on April 19, nearly thirty days later, General Washington communicated the news to the army.

In these days the news so much outruns the sun in his course, that what happens in the morning in Paris, is read the evening before in American papers. In the case of the death of a prominent person in Europe, we hear of it long before our clocks indicate the hour of the event. All this is due to improved methods of transportation. In some lines we have almost wiped out space and time, in others we are rapidly overcoming the difficulties that lay in the way of our fathers.

Not only has time been saved but expense also. Fifty years ago twenty-five cents was the ordinary postage on a letter from New York to Buffalo. From London to New York more than twice that amount was paid. In our own country it was idle to speculate as to the amount of time needed to make a journey from New England to the western prairies. Now a man may make his engagements and calculate with certainty to within a few hours at the most. If you will take the trouble to investigate the transportation necessary to provide an ordinary dinner, you will be surprised to find how many states and cities pay tribute to your appetite.

Increased facilities for rapid transportation have been a wonderful stimulus to our industries. So much so that we have come to estimate the prosperity of the country, oftentimes, by the number of miles of railroad built within a year. Add to this the water-ways, the express companies, and their ever present helps, the telegraph and the telephone, and we begin to realize that all the world is our next door neighbor. Our interests are now more closely than ever bound up with those of Europe and the Orient. In a very literal sense the world is growing smaller. We cannot despise our neighbor or leave him out of the reckoning in our own pursuit of wealth, pleasure or greatness. His interests are bound up with ours. In the early part of this century nearly every farm was a law unto itself. The markets were home markets. Communities were compelled to reduce their wants to their own ability to satisfy them. The farmer in Ohio had as little prospect of selling his wheat and corn in a Liverpool market as he himself had of taking an European trip. To-day the markets of the world determine the price of all the products. Chicago and New York make their quotations from Liverpool and London reports. Liverpool listens to the response not only of Dakota's wheat-fields but those of Australia as well. The world's clearing-house sends its message along the line. We accept the statement and go about our business accordingly.

In all this progress it has been discovered that so far as farmers are concerned, at least, the world is not in their hands, but they are in the hands of the world. Transportation has been one of the essential factors in the growth of our civilization. Perhaps as much as any other factor it has intensified the civilization, centralized the problems, and brought with it all the advantages and disadvantages of competition. Increased facilities for rapid and safe transportation always signify cheaper transportation. That will eventually bring us cheaper commodities. Cheap commodities signify cheap raw materials, low prices for agricultural products, and a downward tendency in wages. We sometimes say that we ought to protect ourselves against the competition of cheaper producers and cheaper labor, but the inevitable tendency is toward a level that measures a minimum of existence for the man who produces at first hand from the soil. The most that he can hope to accomplish is, so far as possible, to stay this tendency and to provide such means as may enable the tiller of the soil to compete fairly with others in the race and receive what is justly his.

I desire, therefore, in speaking upon this subject to present only such phases of it as are particularly related to the farmer. First of all, listen to a few statistics taken in part from the census of 1890. The railroads for that year carried passengers amounting to an average of nearly two hundred miles for each person

in the United States, on a basis of a population of sixty-two millions, and the passengers by water for the same year were one hundred and eighty-five million ninety-four thousand six hundred and eighty-one. In 1893 the railroads carried five hundred and ninety-three million five hundred and sixty thousand six hundred and twelve persons. (This, I presume, did not include the legislative dead-heads who travel on passes, and whose name is "legion.") The tons of freight for 1890 amounted to seven hundred and forty-five million one hundred and nineteen thousand and seventy-four. The express companies carried twenty-eight million one hundred and eighteen thousand four hundred and thirty packages and a tonnage of one million six hundred and forty-six thousand two hundred and seventy-five. Evidently this world is moving. If we could add to this total the amount of transportation of which no accounts are kept, both on farms, in cities and elsewhere, we should see that the labor of transportation is no unimportant factor in the world's progress.

It is worth our while to keep in mind that three-fourths of this vast amount is the result of improved methods of transportation that have come with the railroad and our growing civilization, and that the amount of it and importance of it will certainly increase in the future. Civilization is now so bound up with this factor, that anything that would seriously impede the transportation of the world, would bring most serious disaster.

We pass now to the second observation, that in this progress the transportation companies have come into the possession of some of the finest properties in the world. Their location, and the extent of them, oftentimes cover the choicest part of our territory. Many of these titles are of the most absolute kind. Others are of the nature of franchises and privileges. It has always been argued, and that truthfully, that these companies have developed the commerce of the country and have given increased values to lands. The proof of this fact could be readily seen in the manner of settlement in our western country as contrasted with the settlement in New England. In early days the railroad sought the towns. They were the means of transportation from town to town and from city to city. They looked to the towns and cities for their business. Now a new railroad means the springing up of towns all along its lines. The towns are hunting the railroads. Cities even make bids for them, and are offering a bonus to secure a new connection or additional railroad facilities. Much of the land in the far west would be almost worthless were it not for the railroad. The business of the country, oftentimes, depends absolutely upon their terms. A few years since some thirty smelters in Pennsylvania and Ohio were closed for a considerable period of time, simply because they could not induce the railroads to give them a rate enabling them to ship out their products. This side of the argument is evident to every one and has been popularly presented and vigorously urged.

On the other hand, it has been almost if not entirely overlooked that the future has more in store for the transportation company than for the land itself or for ordinary business enterprises. Every other institution in the world is forced to submit to a permanent competition. Transportation companies have reduced competition to a minimum. We occasionally hear of a railroad war, and almost certainly soon afterwards hear of an increase of taxes to pay for the war. The increase of population is not always at the same ratio as the increase of the price of produce: nor has the price of land increased in the same proportion as the business and profits of transportation companies have increased. They invariably increase with the increase of population, without much additional operating expense. On the other hand, we are now confronted with the strange fact that land is less desirable than when we had a much smaller population. That is to say, the number of profitable investments apart from the agricultural investments, has been rapidly

increasing. Men have found other things far more profitable than tilling the soil. The fact that our transportation companies have increased so enormously in their wealth and in their earnings has been a cause of serious alarm. These earnings have been so much under their control that the profit or loss of almost any other enterprise depends upon the cost of transportation. The location of a town or city is often determined by the question of transportation, and its success is always conditioned upon it. In this matter the transportation companies have looked well to their own interests. They have been getting hold of fine properties and valuable franchises, while the people have been carelessly, and I think foolishly, giving away these same franchises. The rates and charges have too often been upon the principle of charge "all that the traffic will bear." Men have argued that the cost of transportation must always be the difference between the cost of production and the market value at the destination. But this theoretical reasoning has always worked ill to the farmer. It has left him with a net price for his product that indicates a rate on his investment much lower than that of the transportation companies. The argument is really put forth in the interest of high rates for the companies. At the same time that the farmer is receiving this low rate upon his actual investment, the transportation company has been able to pay a light dividend on heavily "watered" stock, which actually amounts to a very handsome dividend on the actual investment.

So burdensome has this been that the abuses have given rise to nearly all our railroad legislation. There is no reason to believe that the abuses are ended. We may congratulate ourselves that we have cured one disease, but we shall not be perfectly safe until we have gone through the whole catalogue of the diseases to which mortal flesh is heir, and are sure then that we have been vaccinated to provide against a return. Human nature remaining what it is, we may expect every new enterprise to present us some new problem.

A third observation is now in order, namely, that this position of power has practically enabled the transportation companies to be masters of the situation. They are doing for us a tremendous business. In operating these enterprises they have secured valuable properties and franchises. They have proved themselves to be essential to a progressive civilization. That gives them power, a power, too, which they wield to their own advantage. The struggle to hold that power forms an interesting history for twenty-five years past.

The three great agents in transportation are the railroads, the water-ways and the express companies. These may illustrate for us the above statement. As to the railroads, it is now too late to discuss the question of extortionate rates. Every man is familiar with them, and railroad men have conceded the point. Mr. Charles Francis Adams some years ago said in an address, "The dishonest methods of rate-cutting, the secret systems of rebates, the indirect and hidden payments made to influence the course of traffic resorted to or advised during the last two years, I do not hesitate to say are unprecedented in the whole bad record of the past. Yet among us railroad men the fact that these things are done is notorious. It is all part and parcel of that sneak thief and pick-pocket method of doing business, which has become a second nature in certain grades of railroad service." This statement is certainly frank enough to command our attention. It relieves us from the necessity of proving some things, or of discussing the devices by which some companies have attempted to cover up their profits or excuse their methods. The simple fact that railroad legislation of some kind has been found necessary in every state is evidence enough of the abuses from which the people were suffering. It is proper to note in passing, that the farmer has borne his full share of the oppression. He is the man who voted the bonds on which the money was realized with which to build the road. He is the man who has furnished a large percentage of the freight that has paid the interest on those same bonds. In many

instances this procedure has simply provided another basis for the issue of bonds on which the people eventually pay the interest. But in the division of the proceeds of labor at this point, the farmer has had nothing to say, and he has not even been *heard* on the question. The management has proceeded upon the principle of charging "all the traffic will bear," with as little regard for equity in the case as would seem to have been in the mind of the French economist who described taxation as consisting "in plucking the goose so as to procure the largest amount of feathers with the least possible amount of hissing." It was these abuses that gave impulse to the movement for state regulation of traffic, and later to the establishment of the Inter-state Commerce Commission. Experience has proved that the railroad as a public carrier has been managed by the railroad as a private corporation for profit, with but little reference to the individual producer. It has been a long process of education in which corporations and people alike have learned what was meant by a common carrier or a public servant. In the heat of passion the people have forgotten that the railroads have rights. The railroads have been slow to learn that extortion was neither a right nor a privilege long to be permitted or endured. In recent years for a variety of causes railroad service has improved, rates have been adjusted to new conditions, and public sentiment has been steadily growing in power and influence. While things have improved they are yet by no means satisfactory. There is a large amount of intelligent work yet needed to provide against new methods not less unfavorable than those already corrected.

In this same line the express companies have been able to control almost entirely the cost of transportation in their line of work. They have been dependent in a measure upon the railroads, but certainly independent so far as the people are concerned. The disposition in Ohio to tax such companies has grown partly out of the fact that they were believed to receive pretty large returns upon their investments.

The water-ways in so far as they are public and provide for free navigation, have been the cause of less complaint. Inland water-ways under private management have often been as objectionable so far as rates are concerned as railroads. They have been known to pool their interests in order to put up rates. They have been bought up or controlled by railroad companies in such a way as to destroy competition.

On the other hand, public and independent water-ways have always been and now are of great importance to the commercial world. For some years past there has been a tendency to abandon canals and to neglect river transportation. There is some evidence that the railroad companies have interested themselves in encouraging this sentiment. I believe that the experience of the world proves that to be a mistaken policy. There is a kind of traffic that can always be carried on water-ways which cannot be profitably carried on railways. Then, too, such cities as Cincinnati, Pittsburg, St. Louis, Chicago, Detroit, Cleveland, and Buffalo, indubitably prove the value of water-ways. The amount of this traffic is much greater and of more importance than many people suppose. Comparing it with the foreign trade, it may be well to notice that the freight passing Detroit annually amounts to about twice the foreign trade of New York, and more than two-thirds of all our foreign trade in all our seaports. On the Great Lakes there are nearly four thousand steam and sailing vessels. In 1891 they carried more than sixty-three million tons of freight, or about twenty-five per cent. of all the freight carried by all our railroads. The fact stares us in the face that the cheapest freight rates in the world are those for grain between Chicago and New York because the cheapest inland water-rates are between these same points. It has been stoutly argued that the best regulation of railroad rates is the independent water-way.

It is well known that the present tendency of railroads is to avoid competition

by providing for a division of the traffic among themselves. It is being constantly argued that the railroad is a natural or necessary monopoly and must be exempt therefore, from competition. It is certainly true that the competition between railroads has been very limited and of spasmodic character. As indicating this disposition not to compete, I cite a single example of the directors of two railroads in New England, meeting and agreeing together to parcel out the territory and its earnings. This was not a pool nor competition, but peaceable division. As regulating this condition of things, the natural and artificial water-ways will prove increasingly beneficial, if they are kept as public property upon an independent management. The great highways, the lakes and rivers are free to all and therefore free to a healthy competition. If artificial water-ways could be put upon the same basis, there is no doubt that equally beneficial results would follow. There is abundant evidence to prove that water-ways have been most efficient in reducing rates on the railroads. The opposition which railroad companies have shown to water-ways is perhaps proof enough of this assertion. It is a great mistake for us to suppose that future commercial conditions can be best served by a single method of transportation. It will not be sufficient to have good railroads, if the interests of the whole people are to be considered, there must be not only good railroads well managed, but good water-ways and good wagon-roads, so that every farm can be brought within easy reach of the market where its competitors sell.

It may be proper here to note that the character of transportation by water is essentially different from that of railroad transportation. The natural water-ways of a country are always open and free. This leads to the presumption that all artificial water-ways should be alike free. There does not seem to be any good reason why an inland water-way should ever be under, or controlled by, private parties as a private enterprise. The dangers arising from such ownership are so great that the state of Pennsylvania has found it necessary to protect her people by providing that the managers of railroad companies should be in no way associated with the management of canals and vice versa. There are good reasons why there should be public ownership of any productive enterprises. It seems to some people to look like a form of state socialism and to interfere with the individual and private rights of the citizens. However, that argument would be entirely legitimate against the public postal service if legitimate anywhere. I am not disposed to advocate the state ownership of railroads. I do not believe that the state should ever own what it would be more advantageous for the citizen to own, but the question of public ownership of water-ways is closely and intimately connected with the natural water-ways. There is a good reason for such ownership and no good reason against it.

There are three theories of government: first, that the individual exists for the state; second, that the state exists for the individual; and third, that the state exists for the whole people. We have committed ourselves to the third theory. The people take precedence over any and every individual. The question of transportation is the people's question. The natural water-ways belong to the whole people, and artificial which are simply the extension of the natural water-ways rightly belong in the same category. To maintain and develop such a method of transportation is in my judgment to effectually provide against many abuses in the future.

In concluding this paper, I desire now to offer some practical observations, and to open some debatable questions in considering more closely the problem of transportation as related to the farmer.

And first of all, let us bear in mind, that by means of improved transportation, the local farmer is brought into the world's market. We are more than familiar with the thread-bare story of home markets. As a matter of fact, home markets are few and far between, and they are becoming fewer. We may as well recog-

nize that fact and prepare ourselves to meet it the best we can. The truth is now that the value of a farm is often conditioned upon its nearness to a railroad and its accessibility. A railroad and a good turnpike determine the price per acre. These things bring a man into quick and easy touch with the world's pulse. We may object to this cosmopolitan market, but we cannot help ourselves. We must make the best of the situation as it is, and cease wishing for one to our own heart's desire. This means that the extension of good roads is vitally necessary to the individual farmer. At present the inequalities between farms are as great as the inequalities between farmers and other classes of citizens. It is perfectly legitimate for us to make an effort to increase our home markets by inviting new enterprises and new forms of industry. But the chief determining factor for the future will be the world's market and not the village market. The improvement of local transportation will prove itself a valuable investment for the community. In early days all roads led to Rome. That gave the city its importance, but it also brought to every traveler a share in the city's prosperity. The farms of our country must be made easily accessible if their values are to be maintained. To this question it seems to me advisable for counties to give increasing attention. No one will dispute the local benefits arising from such improvements. Very many will dispute the ability to make them. When we get at the real truth, however, it will be discovered that railroad corporations and some others have now a virtual mortgage upon the products of our farms, because most of them with little paid up capital are carrying heavy amounts of bonds and mortgages. If local communities could see that they were able to carry perpetual loans in the interest of permanent improvements, it would be quite as legitimate and much less burdensome than the tribute they now pay to transportation corporations.

A second observation may now be made, namely, that the present system of transportation has been so developed as to open the way for stock speculations. We have now a class of speculators in railroad stocks. By means of the rapid transmission of information from continent to continent, and the detailed information as to crops and their conditions, there has arisen a class of speculators in agricultural products. The final results of these speculations are paid from the soil. The farmer has no compromise to make with the stock-gambler or the speculator in the products of industry. This evil has been developed along with the growth of the great system of transportation. It is not a necessary part of it, but is an ever present accompaniment. It is certainly discouraging if we have not faith enough in the inventive genius of the American citizen to believe that some method will be discovered by which these evils may be reduced to a minimum.

I suggest as a partial cure, at least for some of these evils, that we submit to the instruction to be had from experience. The truth is that railroads have been subsidized, valuable rights of way have been given, corporations have been organized with little or no capital stock, and out of all these things have grown abuses. Why is it not in the interest of the public that some supervision be exercised and some prohibition if necessary? Why should any railroad be run through a given county or across a state when there is no public demand for it? Why should a corporation be organized and recognized, with little or no paid up capital stock? Nearly all our difficulties with railroads can be traced back to the fact that they began with insufficient capital stock, and were allowed to continue without any efficient, or sufficient supervision. The lesson of experience is that men need to protect their own rights. Inasmuch as the transportation question is wrapped up with the question of civilization, and inasmuch as all future prosperity is conditioned upon suitable transportation, it is not possible to emphasize too distinctly the necessity of the public interest in such questions. It is possible that we may pay too high a price for civilization. In a popular government such as ours, the young citizen needs to grow up conscious of the fact that the destiny

of the state and of himself lie in his own interest in, and action upon public questions. I believe it to be a fundamental principle that the state exists for the welfare of the whole people, and that every theory of right and liberty must fall within this general principle. We hold it to be not merely the state's privilege but the state's duty to provide for the general welfare. Transportation is one of the vital problems in our civilization. Its importance increases every year. State regulation and state control of the means of transportation need now to be emphasized more and more in the interest of the whole people.

President Agee: I see in the audience Hon. Martin Dodge, member of the Legislature from Cuyahoga county. We would like to have a three-minute talk from Mr. Dodge. We would like to have a longer talk, but we are limited for time now to comment upon this thoughtful address.

Hon. Martin Dodge: Ladies and gentlemen, I am somewhat in the condition that Dr. Thompson said he was in reference to having his views to deliver to-morrow, which come perhaps better before what I may say now in the few minutes that your chairman has allotted me than after, because the few minutes which I have would be insufficient to more than state my conclusions without giving reasons upon which I base them, to any very great extent. I will, however, supplement what the Doctor has said in reference to one line of thought which prevails to a great extent, but to which the doctor made no allusion. I refer to the means of transportation by electric cars upon the highways, which from my point of view is very important and destined to be very much more important; sufficiently important to raise up that competition which I think would be necessary and beneficial in bringing about the very desirable end that the steam roads which now exist shall not be the masters, but the servants of the people. It is true that rates of transportation are higher than they should be in many cases, and especially so in what is known as the "short haul" distance, but the "long haul" distance is cheap, and I agree with the Doctor in this, that that has regulated all competition, the chief factor of which is water carriage upon the deep water. I hope, however, that that same competition cannot be made upon shallow water that we have upon the deep water. I should be glad if I had time to digress upon that, but I will not do so. Now, while the cheapest transportation we have is this deep water transportation, and while that furnishes the best and strongest and most constant and lasting competition that we have, it is also true on the other hand that the dearest form of transportation we have is the horse power which we have on the common road and which power moves a great tonnage, almost equal to that moved by any of the other means. Now, the rate of transportation in the State of Ohio, according to the report of the Commissioner of Railroads is about one-half cent per ton per mile upon an average, but by the horse and wagon system of transportation the rate is twenty-five cents per ton per mile on the average, being fifty times as high. Now, on the proposition that they who are sick need the physician and not they who are well or reasonably well, my thought is and has been that we should do what we can to cheapen the means of transporta-

tion. Everybody is now more or less dependent upon the horse power, and it is extremely expensive. Now there is a power, namely, the electric power, which has been put into our hands and it is true that that power is exactly suitable to cover this great difficulty where we have but little relief at the present time. While we have a great many benefits of cheap rates by deep water and steam cars, we never had the cheap rates for what we call the "short" distance, that is to say, in the neighborhood of twenty miles. We have never had a cheap rate of transportation, and my judgment is we can never do so under our economic laws, which I will not now explain. It is upon the short haul of from ten to thirty miles that we do not have any cheap transportation, and we have made but little progress in a generation in that respect. But now we have under our control a new power, the electric car, which is used such as I have named, and it is certain to my mind that it can be successfully applied to give a cheaper transportation than the steam cars can give, and they give a cheaper transportation than the horse power. The fact is, that we cannot use the steam car upon the short haul without supplementing it with the horse power, which I have said is so very expensive. My theory is that our population, having been concentrated to a very great extent, and these electric roads already in the centers of population, we can greatly extend from these centers of population the street car tracks out into certain adjacent territory for a distance of from thirty to fifty miles, and all people may make use of these lines, which do not cost any more for construction than your macadamized roads do, and in this way everybody will be provided with a cheaper means of transportation. You will then be able to compete with the short haul, varying from ten to fifty miles, with the steam roads, and the result of that will be a cheaper rate upon the steam cars, so far as it lies in their power to overcome those economic laws that I referred to, and you will have a much cheaper rate than can ever be attained by horse power.

Mr. T. R. Smith: I have listened with a great deal of attention and interest to these very able papers, and especially to this question of Dr. Thompson's on the question of "Transportation." Our success or interest as farmers is bound up very largely in this question of transportation. Every farmer must be able to raise not only enough to supply his family and his teams, but there must be a surplus for the market. Now, we have been shown, I think, that we can meet that demand, can produce a surplus. The next thing there must be a demand for that surplus, that means there must be a market, whether a home or foreign market it don't make much difference, but there must be somebody somewhere that wants this surplus that we produce. Now, there is not very much difficulty if things are rightly managed. The state of Massachusetts does not produce grain enough to make a loaf of bread a year for each of her inhabitants, and yet the people of Massachusetts are flourishing about as well as the people of any other state, I think. If the hungry mouths in this country were all

fed, if every man who is willing to work and every woman who is willing to work had three square meals a day, we would not hear so much about over production and surplus. The third point is that there must be some cheap, economic way of getting this surplus that we produce from the men who produce, from the farmer to the consumer, from the farm to the market. That brings in this whole subject of transportation.

Now, I agree with Mr. Dodge, of Cleveland. I believe his idea of the development of this power of electricity to push all these electric railroads is right, and that that one feature will help to solve this difficulty. This power of electricity is in its infancy, and yet in its infancy it is a giant in competition with steam on these short hauls, and I believe from the development that is going on that the cost of transportation along these short hauls may be so materially reduced that they will furnish ample competition and complete protection to the farmer, and these are things that the farmer is interested in.

If my digestion continues as good as it is at present, I believe I shall live long enough to see the day when the farmers of the state will pay taxes on what they own and not on what they owe, and when corporations shall do the same thing, and when we have lived to see that day these difficulties will have vanished. The fact is that the farmer is paying a great deal more than he ought to pay, and the corporations are paying a great deal less than they ought to pay, and the people of Ohio have been so indiscrete that when the opportunity was given them to authorize the legislature to adjust legislation to meet this case they persistently and plainly said they did not want to amend the constitution, by which these franchises can be taxed. But when the next constitutional convention comes around in Ohio, I am very certain that nine-tenths of the farmers of Ohio will vote to amend the constitution and give the legislature this needed power.

President Agee: Professor Hunt wishes me to say to you that he desires every one of you to understand that you are specially requested to remain to the banquet this evening. We would not undertake to close this institute in Columbus without a talk from Brother W. R. Parsons.

Rev. W. R. Parsons: After listening, as I have, so attentively, I have been perfectly absorbed in the discussion going on here and I have lost my individuality. I have only one thought that seems to press upon my mind. We have heard it said here that all we need is to get what we want—to eat—and that is my condition now.

And thereupon the convention adjourned to Hayes Hall, where a most enjoyable lunch was served to more than two hundred persons who had been in attendance at the meetings from many parts of the state. Short and enthusiastic toasts were given upon the University and its field of work, the agricultural industry and other kindred subjects, by President Canfield, Governor Bushnell, President Alva Agee, ex-Secretary L. N. Bonham, Director C. S. Plumb, of the Indiana Agricultural Experiment Station, and Mr. J. F. Green, of Sandusky, Ohio.

PROCEEDINGS
OF THE
CONVENTION OF WOOL GROWERS

HELD IN THE
Senate Chamber Columbus, Ohio, January 15, 1896.

EVENING SESSION.

Order was called by acting president, Mr. Thomas L. Morris, at eight o'clock p. m., who stated that the president of the association, Judge Lawrence, of Bellefontaine, Ohio, was sick and unable to be present; also that the vice president was unable to be in attendance, and that he was appointed at the afternoon meeting to act as temporary chairman. Mr. Morris said: Judge Lawrence ought to be here. He has been at Washington endeavoring to formulate a report on the tariff on wool and trying to secure a proper duty, and I am sorry he is not here to give a full report of his work. I suppose the first thing in order will be the report of the committee on organization. Mr. W. H. Crawford is chairman of that committee.

The committee reported the following officers, and the report was unanimously adopted:

President, Wm. Lawrence, Bellefontaine, O.; Vice President, Thos. L. Morris, Xenia, O.; Treasurer, A. H. Kling, Marion, O.; Secretary, W. N. Cowden, Quaker City, O.; Directors, John Pow, Salem, O.; M. H. Rhodes, Coshocton, O.; W. H. Crawford, Roscoe, O.

Mr. Morris: I do not feel as though I ought to accept the vice presidency of the organization. I may not be able to give it the attention and time that it ought to have. There is going to be a good deal of work for this committee to do and this association to do in the next two years, more perhaps than I will be able to give my time to. We are going to have a tariff bill on protection lines, possibly within two years, in my opinion, and it will require a good deal of work on the part of the wool-growers to get their share and proper adjustment of a duty on wool in that bill. The manufacturers are willing to have a tariff on wool, but they are like most men, always wanting a little the best of the bargain, and the wool associations will have to see to it that they get their share of the tariff. While I am perfectly willing to do my part and all that I can, there are other men that I think will be able to do more than I can, and perhaps have more time, and therefore I would like to have my name taken off the report for vice president, and that of some other gentleman who has more time, inserted.

Mr. Brigham: The chairman seems to be, perhaps, overburdened with modesty. I call for the question. Those of you in favor of adopting the report say "Aye." And the report was adopted.

Vice President Morris: Gentlemen, I am much obliged to you, and thank you for the confidence and the honor conferred upon me, and I will do the best I can, but in attempting to do that that ought to be done to secure the interest that the farmers have in the framing of the next tariff bill, we will want the assistance of all the wool-growers and farmers in this country. We need backing, and if we have that we may get something done and done right.

Resolutions were adopted commending Hon. Columbus Delano and Hon. David Harpster for their valuable services in the past, in the interest of wool-growers and the grateful recollection in which these gentlemen will ever be held for the long and arduous services they performed for the state and nation.

Resolutions of condolence with Judge Wm. Lawrence were also adopted, he being prevented by illness, from attending the convention.

The President: We will call for the resolutions to be adopted by this meeting. They will be subject to discussion, and perhaps many of you may differ somewhat from the resolutions, and by having them read you will be able to form an opinion on them.

And thereupon Senator Hogg, chairman of the committee on resolutions, read the following report of the deliberations of the committee:

At a meeting of the Wool Growers' Association, held in Columbus, Ohio, January 15, 1895, the following resolutions were adopted:

WHEREAS, under the operation of the free wool tariff act of August, 1894, the sheep of the United States have declined in numbers from forty-seven million, two hundred and seventy-three thousand, five hundred and fifty-three in January, 1895, until they are now less than forty million; therefore, be it

Resolved, That it is the sense of the Ohio Wool Growers' Association, without respect to party that, all things considered, it is wise for the present congress to retain the wool provisions of the tariff bill now pending in the Senate substantially in their present form. The measure is an emergency one. Its passage should not be delayed. If amended to offer adequate protection to the wool interests it would open up the subject to general debate and involve harmful delay.

Resolved, That it is the sense of the Ohio Wool Growers' Association, that in order to restore the flocks of the United States, supply the demand of our consumption and for the proper protection of this industry we ask and demand of the Fifty-fifth Congress that the following duties shall be placed upon wool: A specific duty of twelve cents on the two grades of clothing wool known in the McKinley bill as Nos. 1 and 2, and an increase of one cent per pound each year until the fine grade known as No. 2 reaches fifteen cents. On the grades of carpet wool, known as Nos. 1 and 2 of the McKinley bill, we ask and demand eight cents per pound.

Respectfully submitted,

THOMAS L. MORRIS, Greene,
A. H. KLING, Marion,
CHARLES M. HOGG, Harrison,
C. S. CHAPMAN, Union,
F. C. STANLEY, Morrow.

President Morris: Gentlemen, you have heard the report of the committee on resolutions. What is your desire?

Col. J. H. Brigham: For the purpose of bringing it before this body, I move its adoption.

The President: It is now open for discussion.

Senator Hogg: Perhaps it is right for me to make a statement. Persons interested in this measure, as the farmers collected here are, might perhaps think it would be unwise for us to agree to a duty of six and six-tenths cents per pound. But you will remember that this resolution simply says that this measure is an emergency one, and this committee thought that it was best in view of the fact that the present bill, if it be enacted, was simply an emergency act, that we present this resolution. You will find that when we come down to the Fifty-fifth Congress we will ask a different kind of a duty to be put upon wool, and I think one that would be entirely satisfactory to the wool-growers of the whole country. I am satisfied in my own mind that it makes no difference what the views of any gentleman are upon this subject that there is no possibility of passing any bill in the present congress with President Cleveland in the chair, with a duty exceeding six and six-tenths cents per pound. That being the case, it would simply be a matter of folly and nonsense to undertake to ask for anything more than has virtually been agreed upon.

Col. Brigham: I have had a little experience in trying to get a little legislation in the state legislature and in the national congress, and I learned some years ago that I could not get exactly what I wanted, and the only consolation I got was that the other fellow never got exactly what he wanted either.

I would myself like to have adequate protection accorded to the wool-growers, but I believe with the senator, that it is absolutely impossible at this time to secure the passage of such a measure as would be satisfactory to us. I do believe that the passage of this measure, the assurance to the wool-growers of the United States that wool was again to be cared for with other products of our country, would prevent many farmers from abandoning the industry of wool-growing. I believe the effect would be salutary, that it would simply enhance the price of wool. The agitation of the subject and the publishing to the world years ago that wool was to be put upon the free list depreciated the price of wool before the law was enacted. I believe that this legislation is the best we can obtain now, and that it will have the effect to stimulate the price of wool and give to the farmer some little addition to the income now received, and I have never known a time since I have been engaged in farming when the farmers needed all the help they can get, more than they need it now, and therefore I am myself in favor of adopting these resolutions.

Mr. McCoy, Columbiana: The only objection that I can think of upon the short notice that we have had since the reading of the resolution is whether or not the adoption of this will be taken as an indication that

we do not believe, or as a satisfactory reason or belief, that we are convinced or satisfied that we cannot get anything more at the present time. I am not satisfied, Mr. Chairman, that we cannot get better protection than this at the present time. It is not an argument in favor of accepting this small pittance that means practically nothing to the wool-growers of Ohio. Notwithstanding that I am satisfied that it is a great deal of benefit to the wool-growers of the United States in general, but I do not believe that practically it is worth anything at all to the wool growers of Ohio, that is, the passage of this bill that is now before the senate. The sheep in the United States have drifted very largely in the last fifteen years beyond the Mississippi river, where the facilities for growing wool are very different from that in the States of Ohio, Pennsylvania and West Virginia; perhaps more in accord with the producing of wool in South America and Australia. Now, whether or not it would be doing justice to ourselves, representing strictly and purely and only the State of Ohio, to adopt a resolution that would perhaps conform to the entire United States in reference to this wool industry under these varying circumstances, is a question of doubt in my mind. My own idea in short is this, that the wool growers of Ohio ought to demand exactly what they think they ought to have, and that means something like the resolutions, leaving out the first one. I think that we ought to have all of twelve cents of specific duty per pound, as well as ad valorem duty on certain grades as before, and I think that we ought to say so right here now and give our reasons for it. I do not know that we can get it. I do not know any reason why we ought to believe that we cannot get it. Congress was elected for that purpose, and whether we can get it through the Senate and the President is not the question.

Senator Hogg: I would like to ask the gentleman a question. Was Grover Cleveland elected for that purpose?

Mr. McCoy: I would say of Grover Cleveland as everyone else, that he is capable of learning something and he may have learned something during his three years' occupancy of the White House. I think he has. It makes no difference. Let us demand what we think we ought to have. Let us do ourselves justice, demand what we think is right and proper and then let the President exercise his authority and veto it, and then we will know exactly what to expect.

Senator Hogg: We felt that we were taking the advice of the sage of this association, and that is the advice of Columbus Delano, he being unable, owing to the inclemency of the weather and great age, to attend, and he sent his grandson down to explain the reason why he is not here, and he very politely and delicately outlined the way for us to pursue, and that is the first resolution, and I think it is very wise advice. I know of no one who is more interested in the success of the association than Columbus Delano.

Mr. Stanley, Morrow: There are two very important resolutions

presented here. I could vote for the second one, but I could not vote yes on the first one. I do not think it is the sense of the Ohio Wool-growers' Association, without respect to party, that all things considered, it is wise for the present congress to retain the wool provisions of the tariff bill now pending in the senate, substantially in their present form. If amended to offer adequate protection to the wool interests it would open the subject to general debate and involve harmful delay. Mr. Chairman, and gentlemen, I say that the gentleman here voiced my sentiment when he said we ought to ask, we have a right to ask, what we ought to have, and I will not accept what we ought not to have unless I accept it as being the best we can do. I am not so sure, Mr. Chairman, that opening this subject up would involve delays which would be harmful to the wool-growers. The bill, if passed, will give us very little protection against the cheap wools of South America and Australia. I know there are men in the East who caution us to be moderate in our demands, but I tell you gentlemen, that the history of the past teaches me that we must hold our weapons above the mark, even with the mark at least, and not below that which we want. We are asking congress to give us less than we ought to have; not half what we ought to have, and I don't feel that I can in justice to my neighbors and to the men who are looking me in the face, cast my vote for this first resolution without an angry protest. Our flocks are being depleted; we are facing free wool, and I say to you that if we are compelled to submit to 60 per cent. of the McKinley tariff, it is because our hands as flockmasters are tied and we cannot do any better. I will not consent that we accept a moderate protection. Let us ask for what we think we ought to have in a manly way, and then we may be compelled to accept that which they see fit to give us, if anything at all.

Mr. E. J. Clapp: There is nobody who knows how much tariff we ought to have on wool, only the persons who are producing wool. Congress does not know how much tariff the farmer wants upon any of his products, only as it receives information from the farmer himself. I have never known an instance where a farmer went before a committee in congress and proposed to instruct the committee or congress as to the tariff that should be placed upon some manufactured article. If the manufacturer desired his goods to be protected he personally asked for the kind of protection his experience dictated that he needs, and a man in any other vocation in life would be thought out of place to be there proposing what somebody else ought to have. And so, when the farmer comes before the committee or congress and asks a less protection than that which he knows he needs, he is only making public sentiment in a direction to injure his own occupation. Now, it seems to me to be generally conceded by congress that the amount of protection proposed on wool in the present bill will amount to nothing, that the help to be received will not be perceptible. Now, for my part, if I have anything to do in this matter, I would rather do that which will raise public sentiment and advise congress

along an intelligent line as to what we ought to have, than to make the sentiment below where the standard ought to be fixed. I want to say to you, Mr. Chairman, that we have the very best reason to believe that we won't get anything from this present administration, but ruin and destruction and bankruptcy, but it is high time, as we are bordering on the eve of another administration, that we begin to raise the standard of sentiment along the line of what the farmer ought to have, and we cannot begin in any better place than by adopting a resolution here to-night that will voice the sentiment of this assembly and of the wool-growers of Ohio.

Mr. Sprague, Union: The gentleman who has just spoken voiced my sentiments exactly. The good book says, "Ask and ye shall receive." If we ask six and four-tenths cents, or whatever the amount is at the present time, we only weaken our cause. We show to the world that we have no faith in the restoration of the McKinley tariff, and I do think it is fitting here this evening, in this wool-growers' meeting in the senate chamber, where to-day were scenes enacted the results of which will produce what we ask for in the future, that we take a decided stand upon this question. Every person who reads the proceedings of this meeting will know what we mean, and know what we want, and know that we will be satisfied with nothing less, and I assure you that with the legislation that we will get inside of two or three years we will get this, if not more. I say, with the gentleman who has just spoken, that asking for the small pittance of six and four-tenths cents per pound weakens our cause. Asking for twelve cents per pound we are as liable to get six as if we ask for six, and more so. If the Ohio State University wants an appropriation of forty thousand dollars from the legislature it generally asks for one hundred thousand dollars. Ask for what you want at least. If you do not, you will not be likely to get any thing near what you deserve.

I move that we submit the following for the resolution which was read:

Resolved, That it is the sense of the Ohio Wool Growers' Association that in order to restore the flocks of the United States, supply the demand of our consumption and for the proper protection of this industry, we ask and demand of the Fifty-fourth Congress that the following duties shall be placed upon wool: A specific duty of twelve cents on the two grades of clothing wool known in the McKinley bill as Nos. 1 and 2, and an increase of one cent per pound each year until the fine grade known as No. 2 reaches fifteen cents. On the grade of carpet wool known as Nos. 1 and 2 in the McKinley bill we ask and demand eight cents per pound.

Motion to substitute seconded.

Col. J. H. Brigham: I am sorry these gentlemen did not make their speeches before I made mine. I don't agree with them. I have been awfully hungry sometimes and would like to have had a square meal. I have seen the time when I was on short rations and I knew it was no

earthly use to ask for beefsteak and all the things I would like to have had when there wasn't anything in the house but cornmeal. I was satisfied with mush and johnny-cake. Now this bill is pending. This resolution has reference to the bill pending before congress. It has passed the House and is in the hands of the Senate. It is the opinion of those men who are sent there to represent the farmers and the wool-growers of Ohio that no high rate of duty can be secured at this time. They regard it not as a protective measure. It does not go by that name. It is a revenue measure, and on that line they are trying to pass it. It is incidental protection, but we are not satisfied with it. Now then, the question is, do we wish to block the passage of that bill and lose what benefit there may be attached to its passage? If we do, then instruct the senators and representatives of Ohio that we do not want that bill to pass and it is their duty to kill it. It is the duty of a representative to represent his constituents, to vote as they would vote if they were there. Now, as a wool-grower, I would rather that bill would pass than to get nothing. I was present in Washington during the discussion of the wool tariff of the McKinley bill. I was in close consultation with Mr. Delano and Mr. Lawrence and others representing other states. Some of the wool-growers there were radical. They went to the extreme. They were disposed to take nothing unless they could get all that they demanded, and if their advice had been followed in the framing of that bill, that is representing the wool-growers, they would not have got what they did. Mr. Delano, having had years of experience in legislative bodies, believed it was better, if we could not get all that the extreme protectionists would demand, to get as much protection as we could. That has been my idea and my policy. If you want anything, ask for what you want. You do that in this resolution. But here is a measure now pending. It has got to be acted upon, and it is going to become a law or be killed, that part of it at least, and I don't wish to say as a wool-grower from Ohio, "Kill that bill." I am in favor of protection. I want as much protection as any of you, but I know we never can get as much as is demanded by some of those who go to the very extreme. I don't believe we can. All legislation is a compromise to some extent, and we have got to take our chances with the rest. If we can get fair treatment with other classes I am going to be satisfied, if it don't give equally as fair protection.

A Member: Would this be fair protection?

Col. Brigham: No sir. I do not claim it would be fair protection.

A Member: How will this help the wool-growers?

Col. J. H. Brigham: This will help him. There has not been a time in three years when men are riding the highways as they are to-day to buy sheep. I came home a few days ago, and I could not rest a half hour but that there were men coming there to buy sheep.

Mr. McCoy: Isn't it a fact that the sheep buyers were there from the fact that we are on the eve of a change of administration?

A Member: That is right; the change of administration would have much to do with it.

Col. Brigham: A few years ago every man wanted to sell his sheep and the best money I made was in buying sheep. I don't believe we are working in the interest of the wool-growers of Ohio to-day when we give a black eye to the bill that will do us some good. And you say in the same resolution that in fact a protective measure is under consideration. When the subject is thrown open and we are going to have a law enacted that seeks to protect every industry, then is the time to go there and get your full share. That is the time to make a fight. I am in a condition now when I would like a little benefit from the law. It would be just as sensible in my judgment, to butt against a stone wall as to send a bill to Grover Cleveland demanding a duty of twelve cents upon wool. He would veto it before he slept. Now, he did say once, "How can we face the farmers of this country when we have made wool free and protected coal and iron?" He felt as if they might have some protection, but the revenue feature is one that he might regard more than anything else, perhaps, and it is on that line that this bill has been introduced and passed to its present state; but out of this revenue I believe there will come some good to the farmers, and I believe they are in a condition where they will appreciate a half loaf if they cannot get a full sized one. Now, I don't care anything about it personally more than any of the rest of you. I keep a good many sheep. When you recognize the fact that you cannot get all you would like to have when the conditions are all against you, then I believe and have always believed it to be my duty, as a representative of the farmers, to take the best I could get for them, and wait until another time. That is the way I feel about this. I don't want to say that they ought to kill this bill.

Senator Hogg: I am not a stickler for this resolution because I happen to be a member of the committee. I am sincere in this matter, and the gentleman who has just taken his seat voices my sentiment. If a gentleman present will rise here and tell me that he thinks that there would be any possibility of getting twelve cents a pound specific duty on wool in the present congress, if he really believes that, I will not say anything on this question. Does Mr. Clapp tell me that the farmers next year would not be glad to take two and one-half or three cents a pound more for their wool than they are getting now? This is simply an emergency matter. There is no tariff bill being enacted, simply a revenue measure to tide over the bad effects of free trade.

Mr. Stanley, Morrow: Personally, I would ask for as much protection on wool as any man in this convention. I do not deem it wise myself to butt my brains out against a stone wall because I have an opportunity to do so, but rather act wisely and save my brains for the future if I should live long enough to have an opportunity to do better. In the Breeders' Association I wrote a resolution this morning asking that the

present bill be so amended as to increase the tariff on wool at least as much as was in the McKinley law. I heard these other brethren talking, I heard the report from our honored former president, Delano, and I heard these men who are more acquainted with legislation, and I have thought how much it would be possible for us to do under the circumstances anyway, even if we ask for it and even if we get one of our representatives or senators to offer an amendment, whether it was even possible for us to get it through the senate, and then the possibility or probability that the President would never sign such a bill. And for the benefit of our friend over here who speaks about the good Book, I am somewhat acquainted with it myself, and it makes quite a difference whom you are asking, how much you get (laughter), and I am anxious that the farmers should be wise and united, and when they see how much they can do, not undertake everyone to go as you please and ask what you please, but become united on a subject. I, at least, have changed my mind in regard to what we ought to ask, and I believe that it is wise for the present congress to give us a tariff on wool and there is a possibility of this bill's passing and becoming a law. Not only that, it should give us a little protection, and it should educate the agriculturists of the United States and get them ready for a higher tariff and increase their flocks, breeding more sheep, and looking for a better condition in the sheep and wool industry, because we are not sure in saying what we think we ought to have, we are not sure in asking of a congress that shall have a president behind it who undoubtedly would sign any bill that they should pass on the protection of sheep and wool. We have said in public and to Congress and to the world what we think and believe the wool-growers ought to have and the protection that they ought to have, and that is in this resolution, so that as far as educating the public mind, we give it to them.

A Member: I want to say that there is more than two cents a pound in this. There is more than three cents a pound.

Mr. Stanley: There is more than that if the law can be properly enforced. Whatever there may be about this, I believe we ought to act like men who have a hold upon the subject which we are handling, and understand something about it. I believe we ought to be a great deal more compact together than we are, and I believe now if this goes out to the world, the discussion that we have had here on this resolution shows that we are not united, the Senate of the United States will not pay very much attention to us. Now, what we can all unite on and what we all believe is better than nothing, and what we all believe is all that it is possible for us to get in the present congress, should be what we would ask for, and then state that we demand that as soon as possible that we have adequate protection for the wool industry and for all other industries so far as that is concerned. I am always in favor of protecting everything that needs protection.

Senator Hogg: The adoption of this substitute does not necessarily say that we are opposed to the passage of this bill that now exists in the hands of the Senate. It does not refer to that at all. My idea is that we would better do nothing than ask anything but what in our judgment is fair and right, then take what we get, if we get less. If we oppose this resolution to-day and the committee appointed last summer goes over to Washington with a protective resolution, when this protective law that we see in the distant future, is before Congress, the very first thing that the enemies of wool will do will be to hold up this resolution we pass to-night and say, "There is the sentiment of your Ohio wool-growers," and now let us not say anything about this bill at all, but let us get down honestly and candidly and sincerely, without any "buncombe" or sophistry.

Mr. McCoy: Now Friend Brigham knows what is in this matter. He has figured here year after year, and Judge Lawrence, and Mr. Delano and Mr. Harpster and this committee here have figured this thing out year after year and we know exactly or approximately what protection we have got to have in order to protect wool in Ohio as against the importations of wool from free countries. Now, we owe it to ourselves and the flock-masters of the state whom we presume to represent here to-night. The idea of going to Congress and saying we ought to have fifteen per cent. but will take six per cent! Let us say nothing about this resolution pending in Congress, but if possible let us get up a resolution based upon experience of these men who have made it their particular study, and ask what we believe is the very least figure of protection we can take and produce wool in the State of Ohio. Do you suppose that the seven hundred thousand wool-growers in this country can have no influence year after year, what is their fair and proper and just right? The 1893 statistics show that there are about seven hundred thousand people practically engaged in the cultivation of wool and sheep, and about one hundred and twelve billion acres of land devoted exclusively to that purpose, and yet they tell us that this industry, that occupies the attention of more people than any other half dozen industries in the country, is bound to go over there and beg for a mere pittance of what they believe is right? It is not going to retard the passage of this bill. Then let us say to Congress honestly and fairly that we believe we ought to have twelve cents a pound and certain other ad valorem duties on wool that we honestly believe that is our due, that we cannot raise wool in Ohio for anything less. Now, I have had a little bit of experience in this whole business, and if you will excuse me I will tell you what it is. I had the honor and pleasure of occupying the position of Supervisor of agricultural produce of Ohio at the World's Fair, for the last two months, while the committees were examining the agricultural products of the state and passing upon them. When I went down there the first of August I found the finest exhibit of wool the world ever saw, from the State of Ohio, four hundred and eighty fleeces of the finest wool that were ever gathered together in the

world, as we compelled them afterwards to admit. We found everybody organized against us. Congress is nowhere to-day organized against the wool-grower as the committees of the World's Fair were organized against the wool-growers. The president of the committee was a resident of Australia, a man by the name of Booth, the chairman of the committee that passed upon the wool products, a man paid one thousand dollars a month to come there and secure for the British government the premiums upon wool, and he owned between ten thousand and twelve thousand sheep himself, and had his own wool there on exhibition. The second man on that committee was a man by the name of Avery, a wool merchant from Boston, an importer of wool. The third man was a gentleman whose name I cannot recall, but he is a chemist from New York City whose duty it was to scour wool and ascertain the loss on account of dirt and grease. I went down there, the wool was locked up, there wasn't a man there from the State of Ohio paying any attention to that wool. There was another thing about the wool question down at the World's Fair. You remember that there was a one hundred-foot aisle running the whole length of that building, seven hundred feet long, and then across the centre was another broad aisle one hundred feet, four hundred and fifty feet long, and the foreign wools were placed just at the intersection at the northeast corner of the intersection of these two streets, piled up there twenty feet high, where neither man, woman nor child could pass through without having his attention called to the exhibits from other countries, on the main floor. Where was the United States wool? Twenty-five feet above the main floor was a gallery running all around the building. Across here was another gallery, sixteen feet higher than that was another gallery, and in the northwest corner of that second gallery, forty-one feet above the main floor where not one person in one hundred thousand ever saw it, was the United States wool. And after the committee had passed on the wool, and I had tried and petitioned the superintendent who had charge of the building, I could not have the liberty of bringing down the Ohio fleeces and placing them on exhibition.

Senator Hogg: Was there any comparison between the Ohio wool and that of Australia?

Mr. McCoy: Yes, sir, I am coming right to that now. There was an Ohio man there defending that wool that would come and look at the condition of affairs and go away. We finally persuaded John Pow of Salem, Columbiana county, to come down there and stay two weeks. I was not willing to give it up, and I gathered up a few friends and we made a fight for the wool. I carried down fleece after fleece and laid them in the presence of Mr. Booth and men from every quarter of the world, and took them back again, I don't know how many trips I made. And what was the result? We fought that day by day and I went to the superintendent of that building, J. Board Thresher, and took men there from Pennsylvania and Texas and Ohio and we protested against such an out-

rage just as our friends are protesting to-day over in Congress,—the committee sent down there,—against the outrage of giving us six cents a pound when we ought to have twelve or fifteen. And as a result of our protests we took the sweepstakes premium on wool for the world, and Mr. Booth was compelled to admit that Ohio furnished the finest wool in the nation or the world. The only objection that they found to the Ohio wool was that the texture was a little different, that the part that grew while feeding grain in the winter and the part that grew while feeding grass in the summer showed an infinitesimal difference in its texture. But they gave us the sweepstakes premium. And now I do not believe we ought to take to-day anything that is less than fair.

President Morris: I was at Washington a few days and we examined the situation as thoroughly as it was possible for us to do. The emergency bill, as it is called, passed the house and went to the Finance Committee of the Senate and there they refused to hear any oral argument on the question, stating that if they opened it to one they would have to open it to others, and there was no way of getting before that committee, except through the book that Judge Lawrence published, a report.

Now, the bill as it stands only runs to August, 1898, and if there is not any other bill passed by that time the Wilson bill takes its place. In my opinion it is the very best bill that can possibly be got through, and perhaps that won't receive the signature of the President. It will finally pass the Senate, in my opinion, and I do not think there is any doubt that it will receive the signature of the President. Now, this bill proposes six and six-tenths cents on fine wool, seven cents on medium wool, and that bill, if passed and it becomes a law, will give to the farmers at least four cents on their unwashed wool and six cents on their washed wool, over last spring's prices. It will not only do that, but it will stop the depreciation of sheep, prevent them from being driven to the slaughter pens and start them on the road to increase. The passage of the bill will do more than that. It will restore confidence in the business in this country, not only in wool but in everything else. The further shrinking of values will stop when that bill is passed and an improvement will take place in the minds of the people, not only in their minds, but in the business of the country; and just as soon as that bill is passed and becomes a law, wool will go up from two to five cents a pound, according as it is washed or unwashed, unless the wool should shrink that much on the other side, which it does not now look like doing.

Three states in the west have held meetings similar to this and each state has favored the passage of this bill immediately. They are all reported in the Boston Commercial Bulletin which reaches here Monday. These three states have reported their meetings in that paper. The states west of here are favorable to this bill, not as a finality, not as a finality of the tariff bill at all, but simply as an emergency measure. It gives to

the farmers a great deal of money, much more money next spring than they have got the last two years. It helps them that much and does not hinder their prospects of increasing the bill when we get a protection president. Not only that, you will have a better chance to raise the tariff from six cents, inadequate as it is, much better than if it were ten cents. If this bill were to pass for ten cents, then it is questionable whether we would get it raised above that point. There is not a member of the manufacturing associations (their report is in the Commercial Bulletin of Saturday) that indicates that he is satisfied with six cents, and I tell you it is easier to get the tariff raised from six cents to twelve cents or fifteen cents than it would be from ten cents or even from eight cents. I did hear not a congressman express his opinion in Congress from any direction, that was favorable to a tariff at all, who thought that six cents was enough, but that was the best that could be done. Now, I feel warranted in saying to you people here that the passage of this bill as it is will give more relief to the wool interest, to the farming interests and to the best interests of the country, and I think it would be best. Not only that, but delegates from the western states without a single exception. I think, were looking to Ohio to set the example and fix a rate on wool at this meeting in January. They believe that Ohio is the first state in the Union on the tariff question; they believe it is one of the first states in the Union on the finance question, and they look to Ohio especially to set the mark or tariff on wool and all other products. The original resolution as read here sets the mark on wool only twelve cents, and a cent a pound advance on fine wool until it reaches fifteen cents, which according to my knowledge and experience in growing wool is none too much. In fact if I had my way about it the tariff should be raised until the American farmer would grow every pound of wool that is used in this country, whether it was fifteen or twenty cents, and if I had my way about it, I would put the tariff on goods to the extent that the laborers of America and manufacturers of goods that the American people consume, to the extent of their ability to compete with foreign skill and labor. I am an American citizen from first to last, but when we are in the hands of our enemies we have got to deal with them accordingly. We are confronted to-day with the stupidest man that was ever in the Presidential chair, and confronted to-day with the worst treasurer this country has ever had from the beginning. They don't care anything about the wants of the farmer or the people, but all they think about is the sale of bonds to replenish the treasury. Captain Croach, of Texas, and two other gentlemen tried to find out what Mr. Cleveland thought was a moderate tariff bill. A close friend of Mr. Cleveland's told Captain Croach that he thought he would sign a bill of four or five cents. We told him if he would not do better than that we would not present him with any bill to veto. This bill was formulated in the house and we thought if we could get this measure through, it would not only help the farmers, but help the busi-

ness of the whole country. The laborers want it, the manufacturers want it, and our treasury wants it, and why not urge it through if it is the best we can get? Judge Lawrence says in his circular if we cannot get any more than the present bill, to try and get that, and I assure you that in my opinion that it is the best that can possibly be got. I think I worked it up well and the Republican Senators and Congressman are satisfied it is better than nothing and that it is all that we can get signed. Now, I would be sorry to see this resolution defeated, not only on account of Ohio, but every other state in the Union that is growing wool and sheep. They are all looking forward to this meeting to see the stand that the Ohio wool-growers take on this question and they are ready to back them and follow them. They believe in fifteen cents on wool, so that the states east of the Mississippi may grow wool in quantity and quality sufficient to meet the demands of our manufacturers, and we will have to more than treble our sheep to do it. We have but thirty-nine million sheep in this country and it will take one hundred and twenty million to grow wool enough to do us. Now, the sooner we start at it the better, and this bill will give us a starter. This bill will give confidence to the people that when the Protectionists get into power that we will have a bill on protection lines. Mr. Dingly, of Maine, the chairman of the committee on Ways and Means, says that this is not a protection measure, but simply an emergency bill, and I do honestly think that it is the best possible thing we can get and the sooner we get it the better for the country. The goods are swarming in here by the quantity paying light duties; wool is coming in without any duty. Three vessel loads on the way from Australia, two of them sold to be delivered in March. Now if this bill lays over till March this country will have wool enough in it to do for twelve months and keep your markets down. Why not urge the passage of this bill immediately? Why not stop this and give the American farmer good prices next spring? Let me assure you it is not going to be hard to get a better bill when we get that noble man, Governor McKinley, in the presidential chair (great applause). And if he should be so fortunate as to be nominated and elected, I think before the first of April '97 he will call Congress together to relieve the farmers of this country and in sixty days they will have a bill framed on protection lines much after the resolution here. I think I know what I am talking about. If that is so, why not give the farmers next spring the benefit of this six cents? Start it on the road to prosperity if you can, and the passage of this bill will do it. I hope you will all vote the amendment down and pass the original resolution.

Mr. E. J. Clapp: I learn from the remarks of our chairman that he constituted one of the committee that went to Washington to beseech Congress in the way of placing a tariff on wool. You are conversant with the success of the committee. You know the manner in which they were received by a Republican Congress. They were there before this bill was

drafted. They were there asking for a liberal protection, not the protection that is named in this original resolution, but this very committee of which our chairman was a member, went down there and from first to last insisted that they should have an amount, the amount named in this amendment to this resolution, but after this committee had done their work patriotically and enthusiastically to our satisfaction, and we find that when they came home Congress went to work and formulated this bill and passed it through the House and to-day it is in the Senate. Now, we have got the voice of the National Congress upon this matter of protection, upon this measure. They have said to us in that very bill formulated and drafted after this able committee had done their work in Washington—

President Morris: Will the gentleman please let me explain? Mr. Speaker Reed, at the beginning, was opposed to doing anything, and after the committee got there and he saw the determination of them and the members of Congress, he thought something would have to be done, and it was reported, but how much truth there is in it I do not know, that he and Mr. Dingy, after the committees were appointed, had a conference with President Cleveland in regard to relieving the treasury, and got up this emergency bill. I do not know whether there is any truth in the report or not, but at any rate they went to work and got up this bill, and would not let the wool committee have anything to do with it or to say about it, and we had no chance to talk to them. They were not going to be bothered with any person orally, and it passed the House suddenly and went to the Senate. Judge Lawrence remained there and applied to the Senate committee to get a hearing and it refused to hear him or any person else on any question, but was determined to pass the bill as it came from the House so that it might soon get through and speedily become a law. The fact of it was the committee was doing business in its own way regardless of the people. It started that way in the House, and the Senate, thinking no better bill was possible, was endorsing the House bill.

Mr. Clapp (continuing): Mr. Chairman, according to your own statement, which is satisfactory, even you were able, a little handful as a committee, to raise the standard of sentiment down there at Washington so that even Speaker Reed was glad to go to the White House and consult with the President, and the result was that we even get a little tariff. Now, if your committee was able to reach even the throne, what may this legislative body be able to do by a resolution? I am aware that the Senator who spoke upon this matter and introduced the resolution seemed to intimate that those who were not in accord with this resolution were only using "buncombe". I am not just able to interpret that statement. I don't know just what "buncombe" means in the Senate (laughter). I am glad to say to the Senator that we are just as sincere in believing that we should be honest in whatever we say, and if we say anything, it should

voice the honest convictions of the hearts of the wool-growers of Ohio. We are as honest in our position as the Senator possibly is in his, even if he may put the construction of "buncombe" upon it.

Now, Mr. Brigham tells us that he has had much experience in legislative effort before those committees and he found that it was impossible to get that for which he prayed. But did that cause him to cease to exhort in his behalf? Mr. Chairman, if the press reported your conduct in Washington correctly, not an intimation was there that you ever let down or intimated that we would be satisfied with less than the rate you were asking, and why should we, when you were there face to face with that national legislative body, why should we here as an association expressly for the purpose of voicing the sentiment of the people of Ohio, and as the chairman has stated, the states of this great nation are looking to our action to-night as to their future conduct,—why should we ask for that which is less than our hearts tell us we should have? (applause). There is probably no question but what the action of the Senate is fixed as to the course of that bill. It was fixed in spite of your committee, but I will say that that should not have anything to do with the action of this body. Why, Mr. Chairman, you impressed me with the thought that we should throw a little bait to the Chief Executive, that we should just try him a little. Try him a little, don't expect very much! No, I would rather lose my right arm than to raise my voice in the way of a resolution asking Congress, which may at some time flaunt it back into the faces of the wool-growers of Ohio, that "this was the action of your body in assembly," here at our capital. Let us be honest to ourselves and to the world. The chairman has enlarged upon the fact that other states are looking down upon us and upon our actions as a guide to their future conduct, and as Friend McCoy has said, Ohio is the greatest state of the Union, was able to go up to that wonderful exhibition of the world and there compete and come off victorious in this great agricultural product, and it is not right that we should lower our standard here to-night by a bait thrown back to the President and to Congress that we believe in our hearts to be a lie. For me, I will vote for what I believe is right or I will never cast my vote at all (great applause).

President Morris: Gentlemen, are you ready for the question?

And thereupon the amendment to the original resolution was read, as follows:

Resolved, That it is the sense of the Ohio Wool Growers' Association that in order to restore the flocks of the United States, supply the demand of our consumption and for the proper protection of this industry, we ask and demand of the Fifty-fourth Congress that the following duties shall be placed upon wool: A specific duty of twelve cents on the two grades of clothing wool, known in the McKinley bill as Nos. 1 and 2, and an increase of one cent per pound each year until the fine grade

known as No. 2, reaches fifteen cents. On the grades of carpet wool known as Nos. 1 and 2 of the Mc Kinley bill, we ask and demand eight cents per pound.

And thereupon, by rising vote, the amendment as last above read was adopted by fifteen to five.

And thereupon the convention adjourned.

PROCEEDINGS OF THE OHIO DAIRYMENS' ASSOCIATION

IN THIRD ANNUAL SESSION AT

City Hall, Columbus, Wednesday Evening, January 15, 1896.

PRESIDENT'S ADDRESS.

BY PROFESSOR THOMAS F. HUNT, OHIO STATE UNIVERSITY.

The Ohio farmer does not carry his eggs to market in one basket and he never will. Dairying is not the only farm industry in Ohio. It is not the only profitable farm industry. We have abundant examples of many lines of profitable farming in Ohio. Unfortunately, we have more abundant examples where the same lines are unprofitable. The State of Ohio has a diversified soil, a diversified climate, and a diversified people, and must continue to have a diversified agriculture. It remains true, nevertheless, however, that our economic conditions are such as to make dairying one of the most encouraging industries for the Ohio farmer.

It may be worth while at this time, to take a moment in stating some of the conditions. Standing as we do between the east and the west, and having within our own borders a great number of transcontinental railways, our economic situation is somewhat remarkable. We no longer have the virgin fertility nor the cheap lands of the west, nor have we the advantage of the short haul to the great cities of Boston, New York, Brooklyn and Philadelphia, which is enjoyed by Eastern farmers.

On September last, the freight rate from Chicago to New York City was six cents for corn, and six and one-half cents for wheat per bushel, while on the same date, the rate per bushel from Columbus, Ohio, was eight and three-fourths cents for corn and nine and one-fourth cents for wheat. Chicago and Duluth, in virtue of their water transportation, are nearer Liverpool, commercially, than the interior cities of Ohio. Wheat being one of our principal exports, is practically sold in Liverpool markets. Ohio produces twice as much wheat as she needs for home consumption. On the other hand, our dairy product, particularly our butter product, is consumed at home.

Ohio is the fourth state in the Union in her numbers of people. She is exceeded in population only by New York, Pennsylvania, and Illinois. One person out of every seventeen in the United States lives in Ohio. We think of Colorado as a great state and it is, but one-fourth more people live in the cities of Cleveland and Cincinnati than in the whole state of Colorado. Ohio has this vast population without any great cities with their slums accompanying each. New York has her New York City and Brooklyn, Pennsylvania has her Philadelphia, and Illinois her Chicago. Take away from New York her New York City and Brooklyn, from Pennsylvania her Philadelphia, and from Illinois her Chicago, with their dependent tenement classes, and you have greatly reduced the popula-

tion of these states. Ohio has no such great center of population and but few slums and dependent classes. Ohio has within her borders, probably, the largest number of independent property owning citizens with the least percentage of illiteracy of any state in the Union. While she has this rugged, and essentially rural population, Ohio has, nevertheless, a large number of cities of moderate size. Can you name any state in the Union that has for its local market such cities as Cincinnati, Cleveland, Columbus, Toledo, Dayton, Pittsburg, and Buffalo? These and lesser towns furnish unparalleled local markets. These towns contain people who want milk, butter and cheese, fresh eggs, fresh vegetables and fresh fruits. For a leg of mutton, a fine ham, or for genuine lard, they are willing and able to pay. There is probably twice as much fresh fruit and vegetables eaten by the people of Columbus as formerly, for the simple reason that they can be bought. With these products, the laws of trade have been reversed. Instead of the demand making the supply, the supply has created or at least stimulated the demand.

While, as I just stated, one-seventeenth of the population of the United States lives in Ohio, Ohio produces one-sixteenth of the milk produced in the United States. Ohio is the fourth state in the Union as regards her population and she is the fourth state in the Union in dairy products. She should, therefore, be able to sell her dairy products within her own borders, but, while her people are second to none in quality, i. e. in intelligence, morality and prosperity, she is far from fourth even, in the quality of her dairy products. Her reputation is good neither at home nor abroad. When I go to market in Columbus and ask the groceryman whether he has any good cheese, the reply is that he has some New York full cream cheese. The former owner of a cheese factory in Trumbull county recently told me that the grocerymen in the Western Reserve region did not cut their own cheese.

Your worthy secretary has called my attention to the fact that New York ships a car load of cheese to Chicago weekly. This cheese is made largely out of grain and hay raised in the West. The hay and grain is shipped across the State of Ohio in one direction and the cheese is shipped across it in the other direction. Why is New York cheese sold in Chicago and Ohio markets? There are no economic reasons. It is simply through the ignorance and cupidity of Ohio cheese makers who for years have been placing a fraudulent article on the market.

The Hon. J. T. Brooks, General Council to the Pennsylvania Railway, and who is himself also a dairyman, recently said to the business men of Columbus:

"The time is at hand when farmers in Ohio must realize that the world is leaving them behind, and if they would escape financial ruin, they must think, decide and act otherwise than they have heretofore done. There still remain a few sources of income which are not only available, but even most hopeful, by reason of the geographical position of the state, and chief among them I reckon the dairy interest. Cities to the east of Ohio are growing marvellously in population. Wise men predict that the future seat of empire in the production of iron and steel in America, will be within the triangle at whose points are the cities of Cleveland, Pittsburg and Buffalo. The best market for choice farm products is where the swarming population earns large wages in the heat and glare of furnaces and mills. Why do not the farmers of Ohio seize on this opportunity and supply that market with the best butter and cheese that America can produce? It is a reproach to them that her grocers go to eastern New York to buy cheese. It is a greater reproach to them that the wide-awake farmers of Illinois, Iowa, Wisconsin and Minnesota, ship annually across the State of Ohio to eastern cities, tens of thousands of tons of butter, a large part of which Ohio could put into the market if she would, but which she does not do simply because her farmers are asleep while her western neighbors are awake."

I have probably said enough to convince you, first—that Ohio is naturally

and economically situated to be a great dairy state and if it is to be truly such, something must be done to improve its present conditions.

The mission of the Ohio State Dairymen's Association is to improve the dairy interests of Ohio, and to that end it invites the cooperation of other citizens in the state interested in dairying. And now, what can the Ohio State Dairymen's Association do? In the first place, it can and will bring its influence to bear to produce a larger quantity of milk, butter or cheese per cow, at a less cost and of a quality that shall command the respect of every commercial market of the world.

The total milk product of Ohio in 1890 was three hundred and twenty-seven million gallons, which was produced by seven hundred and ninety-five thousand cows. This is four hundred and twenty-five gallons per cow. Allowing seven cents per gallon, the cows produced approximately, thirty dollars each. The cost of food for keeping a cow on the Ohio State University farm in the year 1894 was, approximately, thirty-eight dollars per cow. The cows on the University farm, however, instead of producing four hundred and twenty-five gallons of milk, produced seven hundred gallons of milk each, which would bring at seven cents per gallon—forty-nine dollars. The number of cows in Ohio that do not pay their board must, therefore, be very great and the farmers of the state would be better off if they did not exist.

This Association purposes to disseminate information on the selection and breeding of cows suited for the production of milk, butter and cheese. It hopes to be able to point out to the dairy farmer such methods of care and feeding as shall give him profit, not loss. It is the policy of this Association to recommend to the managers of the Farmer's Institutes a list of practical dairymen who will carry to the farmers of the state in the neighborhoods in which institutes are held, special information concerning dairying. Such a list has been prepared this year by our worthy secretary and I commend it to the attention of the institute managers of the state.

I feel that I am not overstepping the bounds of propriety when I state that this Association was the first to recommend an appropriation for a dairy school in Ohio. The Legislature failed to adopt the recommendations of this Association, but the Board of Trustees of the Ohio State University, feeling that the time had come when some steps should be taken to improve the dairy interests of the state, has made such temporary provisions for instruction in dairying as the funds of the institution would permit, until such time as the Legislature of the state should see fit to make ample and appropriate provisions for this great interest. I feel that too much depends upon the success of this instruction to allow me to omit mention of this subject at this time and place. It will be a great day for Ohio when its dairy products are handled and manufactured by men and women having a thorough understanding of their business. The dairy school can supply this information and the state is therefore making a great advance by its establishment.

This Association will also bring its influence to bear to obtain for dairy products of the state a better market. This Association purposes to secure for the Ohio farmer better prices for his products by raising the general standard of dairy products within the state; so that instead of other states having our markets, the markets of other states will seek our products. I think I speak the sentiments of this Association when I state that it proposes that every person who wishes to use substitutes in the place of products of milk, shall have the privilege of so doing, but it further proposes that every tub shall stand on its own bottom. It proposes that articles shall be so placed on the market, that no one shall consume them in mistake for articles which they are not.

We invite all persons who believe in the aims of this Association, as set forth above, to join hands with us in uplifting this great interest.

SHALL WE PASTEURIZE OUR MILK OR CREAM?

BY PROF. C. S. PLUMB, PRESIDENT OF THE INDIANA STATE DAIRY ASSOCIATION,
LA FAYETTE, IND.

[Delivered before the Ohio Dairymen's Association, Columbus, Ohio, January 15, 1896.]

Tuberculosis or consumption, typhoid fever, diphtheria and scarlet fever are among the most common diseases to which man is subject. More people die of tuberculosis than any other one disease. While we make a great uproar if cholera invades our shores, the fact that over five thousand people die every year in New York City (1) from tuberculosis, a contagious disease, produces no uneasiness among the people at large. Nearly fifteen per cent. of the total deaths, is due to this disease, and in some regions it greatly exceeds this. It is a scourge in our midst, and yet persons or animals suffering from it are free to do as they please in their relations to their fellow men.

Tuberculosis, identical with that from which man suffers, is exceedingly common among cattle. Where cows are kept closely confined in stables, where the light is poor and ventilation bad, the disease is often very prevalent among them. Dr. B. Bang, the Royal Danish Veterinarian, in reporting (2) upon over forty-six thousand cattle tested for this disease in Denmark, shows that for the entire kingdom 35.4 per cent. of them were more or less diseased, while in one province over 50 per cent. of those examined were affected. This, however, is an excessive percentage.

In infested breeding and dairy herds in New York, consisting largely of mature cows, Law has found (3) a maximum of 98 per cent. and a minimum of 5 per cent. while in healthy country districts he has found hundreds of cows in adjoining herds perfectly free from the disease. Recent investigations made in some of our eastern states have shown tuberculosis to be exceedingly prevalent among the cattle of this region. In some instances entire herds, nearly, have been condemned and destroyed. Of three thousand three hundred and forty-one cattle examined for tuberculosis in Massachusetts for the year ending December 15, 1895, under the direction of the State Cattle Commissioner, twenty-six and five-tenths per cent. were diseased and slaughtered. A Massachusetts paper of recent date says: (4) Cattle Inspector, Henry E. Page of Amherst has tested over two hundred cows with tuberculin the past two weeks, and has found seventy of them affected with tuberculosis. One man in Hadley had a herd of fifteen, and all responded to the test. Of thirty cattle at the University of Wisconsin, tested for tuberculosis, twenty-six showed the disease when slaughtered. (5). These are but selected cases of hundreds on record that might be quoted.

Milk is an important food from two standpoints. It is indispensable for the nourishment of the young of the mammalia, for some time succeeding birth. It is one of the most nutritious of foods, and to a very large degree is digested by the stomach when other foods are not. Consequently, it is a very desirable food for invalids and persons undergoing special dieting.

Tuberculosis, diphtheria, scarlet fever and typhoid fever are all caused by minute organisms termed bacteria. These are the minutest forms of plant life known, so small that they can only be seen under a powerful microscope. Twenty-five thousand of them may be placed side by side and not extend over a distance of an

(1) Law: Bull. 65 Cornell Univ. Ex. Sta. April, 1894.

(2) The Veterinarian, November, 1895.

(3) Bull. 65, April 94, Cornell Univ. Agr. Ex. Sta.

(4) Springfield Weekly Republican, Jan. 5, 1896.

(5) Bull. 40, Wisconsin Agr. Ex. Sta. July, 1894.

inch. In other words, one of them is about one-twentyfive-thousandths of an inch in diameter. They commonly grow by divisions, and under favorable conditions multiply with remarkable activity. Under ideal conditions, says Grotonfeldt (6) in twenty-four hours one may be the ancestor of sixteen million seven hundred and seventy-seven thousand two hundred and fourteen of these organisms. Bacteria are also multiplied by spores, practically the same thing as seeds, which in a measure they represent. These spores germinate and produce bacteria. The spores may be exposed to unfavorable conditions, and soon die, or they may remain over for years under favorable surroundings, and then grow and actively propagate their kind. There are many kinds of bacteria, but most of them are harmless, and may be taken into the body without injury. Others, however, are the cause of disease which man has to combat.

Among various substances in which bacteria live and thrive, are milk and water. The bacteria of typhoid fever is commonly found in impure drinking water, and where epidemics of this disease occur they frequently are traced to the use of such water. Typhoid fever occurred in Chicago to a considerable degree during the summer of 1895, and no doubt this was due to the city drinking water being polluted by sewage. This condition resulted in the city press repeatedly warning people to drink only boiled water while in Chicago.

Milk being a good medium for typhoid germs to develop in, it is easy to comprehend how milk placed in vessels washed or rinsed in water containing such germs, may become inoculated with the bacteria of the disease. Says Dr. Russell: (7) "The importance of the above relation is demonstrated in a recent epidemic of typhoid fever in Stamford, Conn. Prof. C. A. Lindsley, Secretary of the State Board of Health, in a letter to the writer, under date of May 20, 1895, says 'In the town of Stamford of about eighteen thousand population, the cases number now over three thousand. All of these cases are the consumers of one milk peddler'. In several instances where persons contracted the disease, they drank the milk while visiting at the house of the milkman. It had been the habit to wash the cans with water from a well, and it is thought that the contamination of the milk occurred in this way."

Cattle, however, do not have typhoid fever, but they do have tuberculosis, and frequently the milk is impregnated with the disease germs before it is drawn from the udder of the cow. While the milk of all cows suffering from tuberculosis is not diseased, too frequently it is the case when not suspected. Under the auspices of the trustees of the Massachusetts Society for the Promotion of Agriculture, examinations covering two years, were made under the microscope, of the milk of cows affected with tuberculosis, but so far as the best veterinary examinations could determine, with no disease of the udder. (8). One hundred and twenty-one examinations of milk and cream were made, coming from thirty-six different animals. The germs (bacterium of tuberculosis) were found in one or more cover glasses upon nineteen different occasions and in specimens from thirty-three per cent. of the animals examined. These animals had the tuberculosis, as post mortem showed, but the udder was free from the disease.

The susceptibility of the animal body to disease, will of course in a measure depend upon the receptivity of the system. No doubt many of us have drunk tuberculous milk without injury, yet where the vitality is impaired and constitutional vigor is low, serious consequences may ensue. Where the udder is tuberculous, the milk will certainly be badly affected with the disease. And yet the disease may be conveyed by milk from cows having udders free of the disease. In inocula-

(6) Modern Dairy Practice, 1895, p. 6.

(7) Bull. 44, April, 1895, Wis. Agr. Ex. Sta. p. 3.

(8) The Infectiousness of Milk, Boston, 1895.

tion experiments, Dr. Ernst (9) used guinea pigs and rabbits which after extended observation were found to be perfectly healthy. They were inoculated with the milk from tuberculous cows whose udders were not diseased. These pigs and rabbits were then killed and a post mortem examination made. Of eighty-eight guinea pigs inoculated with milk from fifteen different cows, twelve had tuberculosis. These results came from the use of milk or cream from six different animals. Of ninety rabbits inoculated with milk from nineteen different cows, tuberculosis was found in six different animals with the milk from four different cows.

What evidence have we that healthy animals or people may contract tuberculosis through the use of milk from cows having the disease? There is no lack of evidence in this direction.

Rabbits, pigs and calves are reported on by Dr. Ernst (10) that were fed milk from tuberculous cows whose udders were healthy. Of forty-eight rabbits, two contracted the disease; of twelve pigs, five contracted it, or nearly fifty per cent., and of twenty-one calves, eight or over thirty-three per cent. became tuberculous.

Dr. Law notes (11) in his experience the case of three calves from healthy parents, sucking the apparently sound udders of three cows with general tuberculosis and all contracted the disease.

The drinking of apparently harmless milk has resulted in the serious sickness and death of more than one person, because it was contaminated with a contagious disease. An intimate friend, a teacher in a western university, was taken seriously ill with typhoid fever. For years he had used great care in his diet and drank no water except after boiling. An investigation of his case, clearly demonstrated that he had contracted his disease from milk, as there had been a case of typhoid fever at the residence of the man supplying him with milk.

The year and a half old son of a college classmate of mine for a week drank the milk of a cow, which soon after was condemned and killed on account of being badly diseased with tuberculosis. Although heretofore strong and vigorous, in six weeks the child began to decline and in three months he died of tuberculosis of the bowels. The father and mother were perfectly healthy.

Drs. Stalker and Niles report (12) a case where five young people between the ages of twenty and thirty years died of tuberculosis from one family during a period of two years. Not a trace of the disease had ever been known in the family of either the father or mother of the victims. On the farm where the deaths occurred they found seventeen cases of tuberculosis in the herd of cattle, and others had died before the investigation was made. They also report another interesting case. A mother and child died, the former from undoubted consumption, the child from intestinal trouble highly suggestive of the same disease. The cow that had supplied the milk to the mother and child was tested and found to be tuberculous. Post mortem examination of the cow revealed a badly tuberculous condition of the udder.

In 1890 Dr. Ernst sent a circular letter (13) to one thousand eight hundred medical and veterinary men, asking, "Have you ever seen a case of tuberculosis which it seemed possible to you to trace to a milk supply as a cause?" From medical men one thousand and thirteen replies were received, but the replies were mere opinions in most cases and not based on established records. Of these eight gave positive testimony of the disease being carried in milk from mother to child, and sixteen reported suspicious cases, while over nine hundred gave negative

(9) *The Infectiousness of Milk*, Boston, 1895.

(10) *The Infectiousness of Milk*.

(11) *Bull. 65 Cornell Univ. Agr. Ex. Sta.* April, 1894.

(12) *Bull. 29 Iowa Agr. Ex. Sta.*

(13) *The Infectiousness of Milk*, Boston, 1895.

replies. Of the fifty-four veterinarians who replied to this question, fourteen gave positive examples, nine suspicious cases, and thirty-one negative, or nearly forty-three per cent. of the disease arising from the use of milk. Using the total collected statistics, nearly six per cent. of the answers reported indicate the occurrence of the disease from the use of the milk.

Dr. Shakespeare expresses the opinion (14) that one-fifth of all deaths of infants and young children, fed on milk, are due to tuberculosis in some part of the digestive organs.

In one city of my acquaintance, of about twenty thousand inhabitants, the percentage of deaths from tuberculosis is very large. A leading physician of that city, who has an extensive practice, has expressed the opinion to me that a portion of these deaths were due to the use of milk from tuberculous cows. One certainly is not reassured as to the healthfulness of the milk supply of some people, to see an extremely emaciated cow, coughing severely in the midst of a herd of fifty or so animals whose milk is distributed daily in the city. And yet such has been my observation.

In view of this situation should anything be done? Most decidedly, yes! The public health is of the greatest importance and should receive every consideration. While producers have their rights, so also have consumers. Further, the shrewd producer will strive to make a quality of goods that will command a premium in the market.

The first and most important step to be taken, is to keep healthy dairy cattle. Herds should be inspected by boards of health, and every animal that is diseased should be condemned or quarantined. Again it is equally important that the sanitary condition about the barns and stables should be as nearly perfect as possible. The drainage should be good. The drinking water should be pure and sweet. Disease germs should not have access to the milk.

At this point it would be a pertinent question for either producer or consumer to ask, Shall we pasteurize our milk or cream?

It is a well established fact, that where the temperature of milk or cream is raised to the boiling point for a brief time, the germs of tuberculosis, typhoid fever and other diseases likely to be found in milk, will be destroyed. Where all germs of life are killed by a high temperature ranging from one hundred and forty to one hundred and seventy-five degrees F. to be employed for a limited time, followed by a sudden chilling of the milk, we term it pasteurization. Sterilization produces a boiled milk flavor, as a rule not so agreeable as the flavor of raw milk. Where milk is properly pasteurized, this boiled flavor is not noticeable or characteristic.

Of all the disease germs, that of tuberculosis is most likely to be found in milk and is the one most to be guarded against. While most bacteria in the growing state may be destroyed at a temperature of from one hundred and thirty-five to one hundred and forty degrees F. for ten minutes, that of tuberculosis requires a somewhat higher one. Dr. Russell gives (15) the following temperatures to kill this organism, as based on the evidence of several investigators.

Thirty minutes heating at 149° Fahr.				
Fifteen	"	"	"	155° "
Ten	"	"	"	167° "

If after heating the milk to a given point for the required time, it is at once reduced to fifty or less degrees by means of ice or cold water and is kept in this condition for an hour or two, any flavor which may resemble scalded or boiled

(14) Medical News, March 26, 1892.

(15) Bull. 44, April, 1896, Wis. Agr. Ex. Sta.

milk will have disappeared. Quoting from Duclaux, Russell says that milk suffers a change in taste when it is heated to one hundred and fifty-eight degrees Fahr. and over, which limit coincides with his own experience.

If milk is kept at a low temperature in an ice box after pasteurization until it is used, any spores which may perchance escape destruction by the heating process, will remain torpid and not vegetate or grow. Further, the rapid chilling process tends to destroy or materially weaken or retard the development of any spores that may have escaped in the heating operation.

It is not the purpose to here discuss methods of pasteurization, but rather whether it is necessary or not, and if the process is a desirable one for the practical milkman to adopt or the consumer to make use of in the home. It has already been shown that the germs of contagious disease often occur in milk when not suspected. In view of this fact, unless we know of a surety that the milk we use is uncontaminated by disease, we should make use of the pasteurization process or buy pasteurized milk. We may pasteurize on a small scale, by putting milk in glass fruit jars and allowing them to stand in water of the desired temperature as long as is necessary, when they may at once be placed in the cooler. Or the dealer in milk may to-day buy the necessary apparatus and build up a pasteurized milk or cream business. Many people would be willing to pay a higher price for the goods guaranteed to be free of disease, than for unwarranted raw milk. It is fair to assume that in the future along with the demand for improved sanitation will come a demand for a general improvement in the wholesomeness of food, and more especially milk. Says the *Rural New Yorker*:—"As true as you live there is going to be as much distinction made between sanitary and unsanitary milk as there is between sirloin steak and a piece off the neck."

For some time sterilized milk has been used for children, and with such success, especially with sick children, that it led to the organization of various charities whose special line of work has been the supplying of sterilized milk to the babies of the poor.

In Europe, sterilized or pasteurized milk is commonly sold, and especially in Germany. A German in charge of an exhibit of sterilizing machinery at the World's Columbian Exposition at Chicago in 1893, informed me that many towns in Germany were generally supplied with the sterilized or pasteurized product, simply because the people desired it.

In the United States the movement along this line is slowly growing, but it will grow faster. In a letter dated December 25, 1895, Dr. H. L. Russell of the Wisconsin Experiment Station writes me: "Our experience in selling milk and cream (pasteurized) here has been very satisfactory. We make a specialty of pasteurized cream and on this product have built up a large trade, not only among those families who use cream directly, but also in connection with the ice cream trade of the city. During the summer this trade consumes sometimes as high as fifteen hundred to two thousand pounds of milk in the form of cream. We have during the past season, also been shipping this cream in bottles to Milwaukee and placing it on sale there at one of the fancy groceries of the town. We have made three or four shipments a week of this material and guarantee the product for four or five days. Any cream remaining in the hands of the agent at the expiration of thirty-six hours is returned to us and replaced with fresh goods. The cream often comes back to us in a sweet condition after having traveled a distance of one hundred and eighty miles and been handled for forty-eight to sixty hours.

"We are also selling here in the city pasteurized milk as a baby food, upon the advice of physicians. During the past summer we have fed as high as twenty-five to thirty babies, many of whom were very sick and we have a number of letters

of commendation from physicians which say that the pasteurized milk has been the means of saving the lives of some of these infants."

Dr. Russell also writes that he believes that pasteurized milk and cream are destined to be used quite largely, especially in large cities; not only from an economical standpoint but from the sanitary standpoint as well. It has so many advantages that its slightly increased cost is by no means commensurate with its advantages. At the Wisconsin station the cream is heated to one hundred and fifty-five degrees F., at which temperature it stands for twenty minutes, when it is chilled.

Mr. George M. Whitaker, the Massachusetts dairy commissioner, writes me that he does not know of any pasteurized milk or cream sold upon the Boston market. If pasteurized milk is sold in Boston, it is in a small way, and is simply advertised by word of mouth among the customers of the dealer.

Mr. R. A. Pearson, Assistant Chief of the Dairy Division of the United States Department of Agriculture, in a letter dated December 28, 1895, says:—"I am advised that many people who use pasteurized milk for any length of time become accustomed to it and prefer it to the new product. I do not know of many towns where a large proportion of the milk used is so treated, but a New York dealer writes that the use of it is increasing. Pasteurized milk has been sold in Philadelphia for several years and quite recently the largest milk dealer of that city has begun to sterilize on a small scale. Companies have been started in Pittsburgh, and other cities and seem to be doing well."

The only two objections that can be appropriately raised against pasteurizing milk, is the fact that such milk is not quite so digestible as the raw form, and that the apparatus for pasteurizing on an extensive scale is expensive. Both of these objections, however, are of minor importance. The change in digestibility is too slight to justify raising serious objections to using such milk. The expense side of the question would soon be overcome by any milk dealer of business foresight, through the increased demand for a grade of milk that would command a higher price than the unpasteurized product.

It is my firm conviction, that when the use of pasteurized milk becomes common in our large towns and cities, the death rate from tuberculosis will materially diminish. Then we will hear much less of the intestinal disorders of children, and then the child that dies of tuberculosis will be an exception. It is stated that since the German government adopted measures for the prevention of tuberculosis in the insane asylums and penitentiaries of that country that the mortality from this disease has been greatly reduced.

If it is essential that the government should inspect the meat slaughtered at numerous points in the country, how much more necessary it should be that our dairy cattle and milk should have a clean bill of health granted them. A butcher acquaintance of mine who owns a packing house and does a large business, wrote to the Bureau of Animal Industry at Washington, soliciting the appointment of an inspector of meats for the city he resides in. He says, "I would like nothing better than having my meat inspected and certified to as to its healthfulness. I could not ask for any thing better for my business." The view he takes of the situation is a correct one. Should not the milk dealer regard the inspection of his dairy herd and his milk in the same spirit as does the butcher? Can he not afford to put a premium in this manner on the quality of his goods? Can he afford to do otherwise? I believe not.

In a town in New Jersey is a large dairy farm owned by a man who caters to the most exacting custom. A board of physicians has supervision over the sanitary conditions of his stables, the healthfulness of his cows, and the special kinds of food they shall eat. This man endeavors by every means within his power

to place no animal in his stables, except she be in every way sound and healthy. He does not receive a cow upon his farm, that will not prove her freedom from tuberculosis by the tuberculin test. The milk from these cows is carefully bottled and distributed daily to hundreds of customers as "certified" milk. The principle adopted by this man has resulted in the development of a business of large proportions that is in every sense successful.

The day is fast going by when the people will be satisfied with milk irrespective of its history, provided that it is not adulterated. The time is certainly coming when "certified milk" will be the rule and not the exception. There may be resistance by some to a new era of this kind, but every fair minded person will agree that, if by preventive measures one life or many lives can be saved, it is our duty to adopt such measures as a moral obligation. Milk is pasteurized for the purpose of preventing sickness or untimely death. In view of the purpose of the practice, leaving all financial considerations to one side, how can we, as producers or consumers, ignore the importance of this matter? Is it not our duty to replace our milk when uncertain in its character with that of wholesome quality, upon which we can depend? Certainly no fair minded person would hesitate over how we should decide such a question as this. And therefore, reasoning out this question to a logical conclusion, shall we pasteurize our milk or cream? We may say without hesitation, yes, or else use "certified milk."

REMARKS OF PROF. A. M. BLEILE, OF THE OHIO STATE UNIVERSITY, ON THE ADDRESS OF PROF. C. S. PLUMB.

That pasteurization of milk is a measure, the general adoption of which would be followed by beneficial results is certainly true. Especially is this so where we have to do with a promiscuous supply such as is usually furnished to cities. The germs of the diseases mentioned have, by most positive proof, frequently been carried by milk and infection in this way produced. In addition to these special germs, a mixed lot of bacteria may be found in milk, bacteria that can produce intestinal disturbances not of a specific nature. If milk were generally pasteurized cholera infantum would become a rare disease.

It seems to me, however, that the danger of infection by tubercle or consumption germs is overestimated. In a cow affected with consumption of the lungs—the commonest form—the chances for having bacteria in the milk are very slight and, unless the udder or teats are diseased it is not common to find these germs in milk. Then too, milk is not a good medium for the growth of the tubercle bacilli as it is for the typhoid and other bacteria. The tubercle bacilli can keep alive in milk and especially their spores, but multiplication and growth do not go on to any noticeable extent. As to the experiments on animals fed with milk from tuberculous cows, several objections might be raised. In the first place it does not appear absolutely proven that the cows used had lung consumption only, and that some of them may not have had tuberculosis of the udder. Then, the percentage of animals that got consumption is comparatively small. In laboratories where such experiments are usually carried on animals sometimes contract consumption of unknown origin, laboratory infection so called; this is a fact to be borne in mind in the interpretation of these results. More experiments on this point are needed, as different observers have obtained different results.

If milk were such a common source of infection with consumption we ought

to find tuberculosis of the bowels as the most frequent form of consumption, whereas it is well known that the lungs are first affected in a great majority of the cases. The usual way of infection in such patients is by the expectoration of consumptives. They cough and spit promiscuously, the spittle dries out, is ground into dust and then breathed in by others. Efforts made to care for such matter would materially lessen the number of cases of consumption.

The danger of infection by dairy products as butter and cheese must be very little, much less so even than by milk, as these substances themselves and their mode of keeping are quite unfavorable to the life of the germs.

ADDRESS OF DR. F. B. McNEAL.

OHIO DAIRY AND FOOD COMMISSIONER.

[Delivered before the Ohio State Dairymen's Association, Columbus, January 15, 1896]

Mr. President and Gentlemen of the Ohio State Dairy Association:

When your president invited me to prepare a paper to be read at this annual meeting, I was very much at a loss to know what branch of the subject I could treat of that would be of greatest interest to you and result in some good, at least, to all parties concerned. Not being a practical dairyman, except in a small way—running a limited farm dairy in the production of milk and butter alone—the particular circumstances surrounding the sale of milk, manufacturing and marketing of cheese and other dairy products, are entirely out of the limits of my personal observation.

My experience in the past four years in the execution of our laws governing the sale of dairy products in the State of Ohio, together with the study of like work as it has been prosecuted in other states of the Union, has given me some ideas of the necessity of legislation along these lines, hence I shall confine my remarks to this branch of the subject. The objects to be attained by legislation are twofold: first, the educational feature of the subject, and secondly, the enactment of judicious laws to prevent the manufacture and sale of adulterated dairy products, and to regulate or prohibit the sale of articles made in imitation of, or coming in competition with, the genuine dairy products.

The first branch of the subject I shall attempt to treat of under two heads:—first, education as it is applied to the improvement of methods of manufacture, transportation and sale of products of this character, and, secondly, the investigation and development of knowledge of the avenues through which injurious adulterations may be practiced, and contagious or infectious diseases disseminated.

It is a lamentable fact that the education of our people in reference to what they eat and drink has been most woefully defective. Much more has been said, written and taught in the different avenues of instruction bearing upon what constitutes a proper ration for our animals and what shall constitute the hygienic surroundings of hogs, horses and cattle than what shall constitute a healthful ration for ourselves or what shall be the hygienic surroundings of our children. At the last session of our legislature, provision was made for the establishment of a short course of instruction in dairying at our Ohio State University. This and lectures of practical dairymen at farmer's institutes throughout the state, constitute nearly all of the educational advantages offered our people for better enlightenment on these lines. This is a step in the right direction, and may we not

hope that the small appropriation given for this purpose may be but the entering wedge for greater and more effective work in definite and positive courses of instruction, that may become available to all parties who desire to become experts in this branch of industrial education.

The second branch of educational development referring to dairy products is the investigation of the incorporation or transmission of disease germs from one individual to another or from lower animals to the human family through the medium of dairy products. Milk, being the foundation of all dairy products, it is the principal medium through which these disease germs can be transmitted and this transmission is effected through two avenues; first, by the incorporation of disease germs into the milk after it has been taken from the cow, secondly, the transmission of the bacteria of disease existing in the cow, through its milk into the human system.

The discoveries of the past two years in bacteriology proving that very many of our most prevalent diseases are originated and propagated by specific bacilli, and the fact that water forms the most universal and convenient means of perpetuating and transmitting these disease germs, the presence of which cannot be determined except by microscopical and chemical examination, renders the addition of water to milk a most serious and dangerous menace to public health as well as a financially fraudulent transaction.

Milk being the most fruitful medium of propagation for disease bacteria, renders it especially necessary that greater means be supplied by our legislature for determining the presence of these disease germs and the methods by which they may be prevented or destroyed.

One of the best illustrations of what may be effected upon this line is found in the experiments of Dr. Wm. V. Lusk in a thesis read before the Microscopical Society of Columbus, June, 1893. By a system of bacteria culture, he determined that the same species of bacteria that were contained in the hydrant water of the city of Columbus were transmitted to the milk, and, that under proper conditions of temperature, etc., these germs were increased in almost innumerable quantities and with surprising rapidity, thus demonstrating that what would seem to be a trivial and harmless addition of a little water to milk may become most dangerous to society.

Another source from which milk may be contaminated after being drawn from the cow is by the transmission of disease germs through the medium of uncleanness in the surroundings of the stable and the operation of drawing the milk. The excretions of the animal may carry these germs, and by careless handling may be transmitted in the operation of milking, as well as by the sputa or saliva that may be in or about the stable which has been dropped or coughed up by animals having diseased lungs or alimentary ailment.

We come now to consider the question of the possibility or probability of the transmission of disease germs existing in the animal from which the milk is drawn, to the person who may use the milk, or any product made from it. In other words, can a specific disease be transmitted from lower animals to the human system? One of the provisions of our adulteration laws has always been to prohibit the sale of milk drawn from a diseased cow, but our ideas have been vague and indistinct, the supposition being that in some way, by the impairment of digestion or interference with nutrition, such milk would be injurious to the health of the person taking it. In the past few years the attention of the veterinarians and physicians has been called to the investigation of this subject, especially as to the transmission of the dread disease consumption, from the cow to humanity. Recently, a very extensive report has been published by the Massachusetts Society for the Promotion of Agriculture upon this subject.

The work of this society to determine whether the infectious element of tuber-

culosis ever existed in milk from tuberculous cows whose udders were apparently healthy, was prosecuted, first, by careful and persistent microscopical examinations of milk from such cattle; secondly, by inoculation experiments with such milk, and thirdly, by feeding experiments with the same milk.

In the examination of milk from one hundred and twenty-one tuberculous cows, bacteria of tuberculosis were found in thirty-three per cent. of the specimens examined. Of one hundred and seventy-eight animals inoculated with tuberculous milk eighteen developed tuberculosis, being ten per cent. of the number inoculated. In feeding milk of tuberculous cows to lower animals, experiments were made upon rabbits, pigs and calves. Of forty-eight rabbits two developed tuberculosis, and these were both fed upon milk from the same cow. Of twelve pigs five developed absolute tuberculosis, while two others were in doubt. In any case, nearly fifty per cent. of these animals were shown to be tuberculous. Of twenty-one calves fed in the same manner eight, or over thirty-three per cent., were tuberculous. The fact that pigs and calves drink milk much more freely than rabbits is given as the probable reason for the greater development of the disease in the former than in the latter. The cows from which this milk was drawn were subjects of tuberculosis, and their udders were free from the disease, as demonstrated by post-mortem examination. Nineteen calves, the offspring of these tuberculous cows were killed within six days of birth, and not one of them showed any detectable evidence of tuberculosis, though a most careful search was made in all cases. This certainly seems to point away from any direct transmission of tuberculosis from a cow to the offspring.

In the investigations of this society as to the actual transmission of tuberculosis from the cow to the human body through the medium of the use of milk, the society, in a series of letters received from nearly one thousand physicians from different parts of the United States, found that nearly four per cent. have witnessed the transmission of tuberculosis from the animal to man through the medium of tuberculous milk. Of fifty-four letters received from veterinarians, fourteen positive transmissions, with nine suspicious cases were reported, making more than forty per cent. of the total.

These investigations at least raise the question as to whether the dread disease of consumption may not be disseminated and propagated throughout the country through this means instead of the old theory of heredity. The fact that the disease is each year becoming more prevalent, and not only the public convenience and the public health, but the existence of our people is menaced by such propagation, is it not then high time that our legislature take some steps for determining this important question?

The avenues through which this knowledge may be derived should not be placed upon the dairy and food commission or any body men who are charged with the execution of laws to prevent the sale of adulterated or injurious food products, but should be left to the scientific investigation of boards of health, veterinary surgeons and other scientific bodies, whose expert knowledge will lead to more definite results; in other words, the determining of what is injurious should be left to the scientific body, the execution of the laws placed in the hands of the legal tribune.

We come now to consider the second branch of our subject, or what regulation should govern the production and sale of dairy products. Milk being the source, or material from which all other dairy products are derived, becomes the prime factor in the consideration of the legal regulation of the production and sale of these goods. Water being by far the largest constituent of milk, and as its use is just as convenient and as beneficial, when used independently of milk as when combined with it, the legal regulation of this article should rather rest upon its other constituents than water. The fact that these constituents exist in milk in

slightly varying proportion, it becomes necessary before any effective legal regulation can be established to fix some standard of value for one or all of the solid constituents contained in milk. Fats being the most important constituent, its percentage is usually fixed independently of other solids. The legal standard for other solids is usually fixed together.

In the State of Ohio, milk is required to have twelve and one-half per cent. of solids not less than one-fourth of which shall be butter fats. In the State of Minnesota, solids are fixed at fifteen per cent. with three and one-half per cent. of fats; Michigan, twelve and one-half per cent. solids, three per cent. fats; Massachusetts, twelve per cent. solids, three per cent. fats; New York, twelve per cent. solids, three per cent. fats; Vermont twelve and one-half per cent. solids, three and one-fourth per cent. fats; Wisconsin, twelve and one-half solids, three per cent. fats.

It will be seen that in the State of Minnesota the standard is higher than in any other State. Their Dairy Commissioner, in his report for 1894, has this to say in regard to it:—"It was thought that when Minnesota standard was adopted, that three and one-half per cent. was excessive, but after eight years' experience, we are satisfied that it is none too high. This high standard has been the cause of bringing a better grade of cows into the State, and purging it of the useless and expensive scrubs."

It becomes a question with us, then, is our standard too high? Nearly all of our creamery and cheese factories now purchase their milk according to the amount of butter fats contained therein as determined by the Babcock tester. It is a matter of very little consequence to either buyer or seller in these cases what standard is established; but in the case of milk dairies, whose product is sold by the measure to consumers, the case is entirely different. The party desiring to use water can get it more cheaply and with less inconvenience, than to depend upon the milk dealer or to get it through the medium of the milk can. In establishing a standard, therefore, should we undertake to make the standard so low that it will include the product of every cow no matter how poorly fed or how poor the quality of the breed of the animal; or should we establish a standard that will require the keeping of an average cow and feeding her at least moderately well upon a fair quality of diet? It seems to me the latter is the more judicious rule to be guided by. All our efforts should be toward improvement, and the establishment of a higher grade instead of degrading and retrograding.

In 1893 I examined the reports of analyses of milk furnished by one thousand two hundred and sixty-nine patrons of cheese factories, the average of these analyses was three and one-half per cent. and out of the total number less than ten (I think the exact number was six) fell below three per cent. It is evident that whenever a standard for milk is established at any figure, it will be impossible for the State to prevent watering of milk above that standard until it shall have been reduced down to the standard, and unless the ratio of fats, to total solids, and of solids other than fats is broken, there cannot be any determination as to whether water has been added after the milking, or whether the cow has naturally produced a diluted quality. Shall we then establish a standard referring to the above enumerated analyses which shall accommodate the six or ten patrons whose milk ran down as low as three per cent. of fats, and allow the other over one thousand two hundred to add water, or shall our standard be established at the rate which will be a low product for a fair average cow? It seems to me that the average would be the proper standard to establish in fairness to consumers of milk, and let the cow which is disposed to give water rather than milk be sent to the butcher's where she properly belongs.

BUTTER STANDARD.

Heretofore, all legislation in regard to the manufacturing of butter has made legal anything manufactured from pure milk or cream, together with the addition of salt and harmless coloring matter. This standard has led to the grossest impositions and adulterations upon the part of manufacturers and dealers in butter, and has had very much to do with the sentiment that has grown up in favor of the sale and use of oleomargarine.

Many commission men of Cincinnati and other points have been in the habit of buying butter during the summer months when cheapest, working in twenty to twenty-five per cent. of salt, placing the article in cold storage, and then putting it upon the market during the next winter at high prices. Others have established large business houses which do no other work than gathering up the old and rancid butter throughout the country, and by a process of melting, renovating, then coloring, have been able to palm this reproduced product upon the public as pure creamery butter. Others taking advantage of the chemical fact that butter melted or warmed to a paste, and agitated with milk will form an emulsion of butter and milk, being a smooth and consistent mass, which when salted and colored, makes a very complete imitation of pure creamery butter. This has led to the fraudulent sale of what purports to be secret processes of making ten pounds of butter out of six, by the use of milk; and the country has been overrun with sharks and fakirs selling to farmers and dairymen secret rights to effect this result. One of the principal so-called processes was termed the Black Pepsin Process, wherein by the use of a little of the powder called Black Pepsin, the individual was made to believe that he could make one thousand pounds of butter out of six hundred. An analysis of this substance proved it to be eighty-five per cent. of common salt, ten per cent. of annatto or butter color, and five per cent. of rennet. Under our law as it stood neither of these fraudulent practices could be reached, and those who made use of them were allowed to go unpunished, until at the last session of our legislature we established a standard for butter, which requires that every article sold as pure butter in the State of Ohio must contain at least eighty per cent. of pure butter fats; Ohio, I believe, being the only state in the Union that has any such standard for butter.

Coloring in butter I believe should be prohibited as well as in any other article of food, as its use can be for no other purpose than to make an inferior article appear to be better than it is, and by its use it enables parties to renovate and resell old, rancid and inferior goods. I cannot see the propriety or justice in prohibiting the manufacturer of vinegar from coloring the same or the manufacturer of fruit butters, preserves, and all that class of goods, from the use of artificial coloring matter, and then allow the butter maker to do the thing thus prohibited; and so long as dairymen insist that this privilege shall be granted them, they need not expect the people to be very enthusiastic in enforcing laws which prohibit such coloring in oleomargarine. As illustrative of this sentiment, among the people, only a short time ago, when trying a case in Columbus against a party for selling oleomargarine containing coloring matter, a juror arose in his place and stated that it was impossible for him to render an impartial verdict according to the law, because he thought that it was wrong to prohibit coloring in oleomargarine and allow the same coloring to be used in butter. I believe that our dairy laws should be so amended as to prevent artificial coloring in any dairy product.

CHEESE.

Legislation in regard to the manufacture and sale of cheese in the State of Ohio is in a very unsatisfactory condition. In 1892 an act was passed by the legislature requiring branding of cheese manufactured in the state according to the percentage of butter fats contained therein. This law was crude, and in some respects unsatisfactory, yet was undoubtedly more in the interest of consumers than anything we have ever had upon our statute books. Two years ago this law was repealed, and a law enacted intended to be in accordance with the New York law, but failing in the particular that it made no exemption of cheese made from skimmed milk. The inefficiency of this law lies in the fact that there was nothing compulsory about it. It provides a state brand for full cream cheese, which any manufacturer in the state may use or not as may suit his inclination, and the result has been that very few cheese makers have felt inclined to make use of the stamp.

Such a law can never be of any value in the way of preventing inferior cheese being manufactured or sold, and will only be used when the manufacturer of full cream cheese thinks that the state brand will be of value to him in securing a market for his product.

In fact, the provisions of our cheese law are so obscure and uncertain that the Attorney General would not venture an official opinion construing the same, but when applied to by me officially, advised that a test case be made in the courts that a legal construction might be placed upon the law. This I have not done, for the reason that a literal construction of the statute would prohibit the manufacture or sale in the state of any cheese except full cream cheese, which under present conditions, would have been an extreme hardship upon the manufacturers of cheese throughout the state, and should the construction of the law by the court be adverse to this position, there is nothing left of the law and no possibility of regulating the trade or protecting the people. Certainly, some measure should be originated by the Ohio Dairy Association which would be just and equitable between manufacturers and dealers throughout the state, and, at the same time, protect our citizens against imposition and fraud, and the sale of inferior goods.

Numerous complaints have been made during the past year that filled cheese was being sold upon the market, and sold at prices with which honest dealers could not compete. This traffic has been carried on in Cincinnati more than at any other point within the state, and the courts there have thrown out prosecutions begun against such dealers for the reason that they have held that the present cheese law is not a criminal statute, but a civil statute for a penalty, and consequently, is not such as can be enforced as other pure food laws are enforced; in other words, that penalty for violation of this statute shall be enforced by civil suit in the courts. This would allow all cases prosecuted to go on appeal, and be dragged out for years in civil court and become absolutely impracticable.

Many samples of what were supposed to be filled cheese upon the market, because of the cheapness at which they were sold, upon being submitted to the chemist have proved to be cheese made from skimmed milk. When the cream is taken from the milk by process of raising and skimming, the milk is only partially available for cheese making purposes, but since separators have come into use, and the fats are removed from pure fresh milk, such separated milk is capable of being made into cheese, and the analysis of such cheese has been somewhat surprising. One sample analyzed during the past summer contained the enormous amount of sixty-one per cent water and seven-tenths of one per cent. of fats, while another contained fifty-five per cent. of water and less than two per cent. of fats. A sample

obtained in the city of Columbus from a retail grocer within the past month and analyzed, showed forty-five per cent. of water and two per cent. of fats.

It must be apparent to everyone that such cheese has very little of food value in it, and when left exposed to the air a short time after being cut, is so dried and hardened that it is not fit to be eaten by anyone.

It is evident that we need legislation upon this subject in the State of Ohio, and need it badly. What, then, shall be the character of this legislation? Bearing in mind that we have two interests to subserve in this matter, that is, the industry of cheese making and selling on the one hand, and the production of a food product, and its sale in such manner as to give to consumers a wholesome and nourishing article, with the least possible deception and fraud, on the other.

I am not here to argue whether under present conditions more money can be made by skimming milk, manufacturing butter and making so-called cheese out of the skimmed milk, or whether it pays better to manufacture only whole milk cheese. It can not be controverted, however, that whole milk cheese is more nourishing and a better food product, that it is more easily digested, than that which is made from skimmed or partially skimmed milk; and I believe that if we had nothing upon our market to-day but whole milk cheese, that in a very few years the difference in quantity of cheese consumed by our people and the demand thus created for it would produce a market for larger quantities of cheese at better prices than can be gotten by any other process. This view, I think, is sustained by the demand created for cheese manufactured in localities where the greatest of effort has been made to produce full cream cheese.

New York, by a persistent effort in the production of full cream cheese, has created such a demand for her product that scarcely a public house or hotel throughout the country that places upon its bill of fare cheese but will mark it New York Cream; and this demand, I believe, has not resulted from any law in existence in the State of New York, but from the persistent efforts of her manufacturers to produce this quality of goods. I believe this, because no legal standard for cheese has ever been established in that State, and no one has been required by law to use any State or other specified brand. Minnesota, I believe, is the only State that has a standard established for percentage of fats in full cream cheese; their standard being forty per cent. of fats to total solids. The reports from the Dairy Commissioner of Minnesota show that there has been a continuous and marked increase in the sale of this standard full cream cheese, and a corresponding decrease in the sale of skimmed and partially skimmed cheese in that State since the enforcement of this law.

The average composition of full cream cheese in that State for the four years from 1889 to 1892 inclusive was as follows:

Water twenty-nine and ninety-seven one-hundredths per cent., total solids seventy and three one-hundredths casein, etc., thirty-four and seventy-four one-hundredths, fats thirty-five and twenty-nine one-hundredths, fats to total solids fifty and thirty-nine one-hundredths per cent. This, too, upon the analyses of nearly five hundred samples. This result is brought about, says the Minnesota Dairy Commissioner, by the use of good rich milk, four per cent., five per cent. or even six per cent. is none too good for cheese. It has been claimed by some that all the butter above four per cent. would be lost in the whey, yet Minnesota experiments show that milk with one and seventy-five one-hundredths per cent. of butter fats lost a greater ratio of fats in the whey than cheese made from milk containing eight and forty one-hundredths per cent. of butter fats: the former losing fifteen one-hundredths of one per cent. while the latter lost sixty-five one-hundredths of one per cent. These results have led me to the conclusion that the best interest, not only of consumers, but the final best interests of all parties engaged in the manufacture of cheese, would be best subserved by a complete standard for full

cream cheese, which should apply not only to all cheese manufactured, but to every cheese sold in the State of Ohio. That this provision should be rigidly enforced, and that all cheese manufactured from milk from which any part of the fats have been removed, should be plainly branded to indicate the same.

The sale of oleomargarine in the State is yet quite extensive, and I believe will be so under any and every statute that may be enacted against it. The fact that oleomargarine well made and of good material, while not as palatable and not so easily digested as number one creamery butter, is a good wholesome substitute for butter, will continue to make for it friends and find for it a sale among our people. Recognizing this fact, it is essential that we should have such legislation as will allow him who desires oleomargarine to buy and use it and him who desires butter to do the same thing, and that neither should be imposed upon and get what he does not want.

The law which we now have governing the manufacture and sale of oleomargarine in the State has proven very efficient, except where such prejudice has arisen against the color law, by reason of the permission to color dairy butter, has rendered the enforcement of law against colored oleomargarine very difficult.

We have had seventy cases in the State during the past year, twenty-one of which have been convicted, four acquitted, and forty-five are now in progress.

NATIONAL LAW.

The late decisions of the supreme court of the United States have determined two questions, first: The States have the right to regulate the manufacture and sale of these products.

Second: The United States cannot regulate their quality or manner of their sale and provide for the raising of revenue. This virtually does away with any effective national law.

ADDRESS OF MR. B. B. HERRICK, OF WELLINGTON, OHIO.

[Delivered before the State Dairymen's Association, Columbus, January 15, 1896.]

The cheese industry of the United States, especially in Ohio, is very sick. The diagnosis of the case has been quite varied, and the nostrums offered the patient quite as numerous, yet none so far have had the desired effect. It would seem to me that the avarice and greed of the manufacturers and dairymen, are responsible for the present condition of the patient. Thirty years ago the greater part of cheese, especially in Ohio, was made from whole milk, and the brand "Western Reserve" was a guaranty of good character the country over.

Then came a time when the manufacturers, and, I am sorry to say it, the dairymen, desired to eat their cake and keep it too, and the skimmer came into use. The quality of Ohio cheese went from bad to worse, until the brand "Western Reserve" was as much a guaranty of bad character as it formerly was of good.

The demand for cheese in the home and foreign markets fell off, for the reason that consumers were not satisfied to pay a good price for something they could not eat.

In 1880 the United States exported cheese to the value of twelve million one hundred and seventy thousand dollars. In 1894 the cheese export amounted to seven million one hundred and eighty thousand dollars; a drop in fourteen years of forty per cent.

In 1880 Canada exported cheese to the value of three million nine hundred thousand dollars; in 1894 Canada exported to the value of fifteen million five hundred thousand dollars; an increase in fourteen years of nearly four hundred per cent.

In Canada the manufacture of filled and skimmed cheese is prohibited by law backed up by strong public sentiment.

The energies of the people have been bent toward the production of honest goods, while quite the reverse has been true in the United States.

Our markets have been injured, first by the production of partially skimmed cheese, then the butter fat was all removed and lard put in its place, and last, but not least, water was put in place of the lard, until samples have been found that analyzed almost seventy per cent. of water and only one per cent of fat. Adulterations may not always consist in the addition of a foreign substance, but may, I apprehend, be accomplished by subtracting some of the valuable parts of the original substance, so that the remaining part is not so valuable or at least so palatable as a food product. This is just what the cheese makers of Ohio have been doing. I believe there is no good reason why the cheese maker should be allowed to extract a part of the butter fat from his cheese, and not be compelled to brand it, so the consumer may know the fact. We have laws that prohibit the selling of butterine as butter, and the dairymen are asking for laws that will prevent the sale of filled cheese; but the manufacturers have very tender toes when you talk of any laws compelling them, when they skim a cheese to so brand it.

The Wisconsin Dairy School teaches that unless butter is worth two and one-third times as much cheese, there is no profit to the dairyman, in making both butter and cheese from the same milk. This has also been the result of my own experience, running over a considerable number of years.

The amount of help required to operate a combined factory, is about the same as that required to operate a straight cheese factory, so the three or four cents per pound received for manufacturing the butter, is nearly clear profit to the maker.

Nineteen years ago I began the manufacture of full cream cheese, and have steadfastly stuck to that line of work, and the demand has steadily grown, with very little effort on my part, until I am making six times as much as at the beginning, and am now unable to supply the demand, during the greater part of the season. Ten years ago I met a gentleman, the head of a large wholesale house, who told me that his family used no cheese, because the quality was not what it used to be; the same gentleman told me not long ago that it now takes three-fourths of a pound of cheese daily for his family. This change was brought about by his house, handling full cream cheese.

This example is but one of many. If people get a good piece of cheese they want another very soon, but when they get a piece from which the goodness has been extracted, they don't want any more for a long time.

Having spent all my life in the dairy, and nineteen years of the time as cheese maker, on my own account; knowing, as I believe I do, the demands of the consuming public, I believe that the state should no longer be a party to the fraud now committed; that the law should recognize but two brands of cheese, *full cream* and *skimmed*. I am well aware that all the cheese manufacturers who make the skimmed will be after my scalp, but for the life of me I am unable to see why the dairyman, who retains the strippings at milking time should be punished, and the cheese maker who abstracts them (put in other words) from his cheese, should go scott free.

What we need is a national law prohibiting the manufacture or sale of filled cheese, whether the filling be of cotton seed oil, neutral or water; also requiring

all cheese to be branded "full cream" or "skimmed", as the case may be, with heavy penalties for any violation of the law. Wisconsin has stepped out in favor of whole milk cheese, and I believe it would be to the interest of Ohio dairymen, if they would take such a stand as would convince the world that their dairy products are what they claim to be.

If we can not have a national law then let us have a state law that recognizes but the two grades of cheese, and insist on a rigid enforcement of that law. This will give us a reputation that in the end will put money in our pockets.

MANAGEMENT OF THE CHEESE FACTORY.

BY PROF. H. J. NOYES, RICHLAND CITY, WIS.

[Read at the State Dairymen's Association, held at Columbus, O., January 15, 1896.]

In the management of the factory the most important factor is in being able to procure good pure milk, free from those germs which produce pinhole cheese and badly flavored butter. If this can be done the rest is easy providing the maker understands his business. The interests of manufacturer and patron are so closely allied that they must cooperate.

When the maker works for the interest of his patrons he is working for his own. It is a kind of selfishness which is commendable. Example: In return for the clean, pure milk which the patron brings him, the maker must produce clean, sweet whey as well as good cheese; not a mess of sour, filthy whey unfit to feed.

The whey vat must be scrubbed and scalded daily and the whey heated to one hundred and fifty degrees thus keeping it sweet. If it is allowed to become sour through lack of proper care, it is unfit to be returned in the milk cans, as the acid eats the tin, besides making it difficult to cleanse them sufficiently to insure the milk's being returned in proper condition. From the Canadians (whose cheese is notably of a high grade) we may learn a lesson on this point.

They will not *allow* sour whey to be returned in the milk cans. One maker said he would close his factory before he would allow it.

It is well for the patron to heed the instructions on the care of milk, given him by the maker, who must be an educator. The factory is the only source of dairy knowledge that a majority of patrons have. Few of them understand the conditions under which the cow and her product should be treated, tho' they may have been born and reared in the business. Comparatively few read an agricultural or dairy paper. This class do not believe in, or attend dairymen's or agricultural conventions. The opposite class, the minority, are intelligent, progressive, thinking men, always in pursuit of more knowledge; but what is to be done with this majority? It is the factory man who must instruct him. Hence the necessity of dairy schools where the butter and cheese makers may receive proper instruction in order to impart it, where they not only learn to make butter and cheese, but are taught the action of bacteria on milk, analysis of butter, cheese and milk, feeding and breeding of stock etc. etc.

A good article of cheese and butter can not be made from poor milk. One can of tainted milk will injure a whole vat full, not only making a poor quality of goods, but causing a loss in yield which is so great, that, could the patrons but realize the pain it causes their pocket books, they would spare no *pains* to remedy the evil; but the opiate of ignorance and carelessness in these matters causes them to be insensible of their loss, which amounts to thousands of dollars yearly.

I do not wholly believe in the saying that the doctor and farmer are the most favored of God because the earth covers their mistakes. While it may apply to the mistakes of the doctor, all the cheese and butter made from poor milk is not buried as perhaps it should be, but goes to the consumer, only to make him disgusted with cheese, and prefer butterine or oleo, rather than the poorly flavored stuff one so often finds.

That much needed reform, an honest method of paying patrons for their milk, has been thoroughly tested and found successful. (I refer to the method of paying for the amount of butter fat the milk contains). All reforms come slowly but this one is coming surely.

The method has been more readily adopted by creameries, than by cheese factories for the reason that the amount of butter fats was thought to be of little consequence in cheesemaking. Dr. Van Slyke of the New York experiment station, in making experiments found that every pound of butter fat in normal milk produced two and six-tenths pounds of cheese. Thus we readily comprehend that the man who furnishes four per cent. milk is entitled to two and six-tenths pounds of cheese more than the man who furnishes three per cent milk.

We find in factories that pay by this method, a difference of twenty-five cents or more per hundred between the lowest per cent. and the highest.

Three hundred reports sent into the Wisconsin Dairy School, by graduates who have used this method, report an experience almost identical with that of Dr. Van Slyke.

THE CURING ROOM.

Cheese may be perfectly made and then spoiled in the curing room. Often the rooms are so constructed as to be beyond the control of the operator. It is best that the walls be thick, with air spaces, that the outside temperature may not affect that on the inside.

This subject of curing cheese is receiving much attention at the present time, and there is yet much to be learned. It is now thought necessary to have a certain amount of moisture to prevent the cheese from evaporating and becoming too dry. The best managed curing rooms are no longer heated by stoves, which cause an uneven heat thus keeping the cheese next to the stove too warm, while the farther end of the room is too cold. Steam, or hot water pipes, are now used, thus distributing the heat evenly.

THE NEW CROMLEY FARMERS' INSTITUTE LAW.

DEPARTMENT OF AGRICULTURE, *Columbus, O., May 27, 1896.*

Through the earnest and effective efforts of Hon. Thaddeus E. Cromley, senator from the tenth (Franklin-Fairfield) district, supplemented by the enthusiastic assistance of the members of the seventy-second general assembly, noted and honored for their friendly interest in everything that pertains to the welfare and improvement of the farming or rural population of the state, the excellent Cromley Farmers' Institute law of 1890, was greatly strengthened and improved by the passage of meritorious amendments on April 27, 1896, which will have the effect of largely increasing the number of Farmers' Institutes to be held under the auspices of the State Board of Agriculture.

Under the operation of the old law, or the law of 1890, the number of Farmers' Institutes held was limited by the amount of money received by the State Board of Agriculture for the payment of expenses and per diem of state speakers. The

per capita allowance of two mills, payable to the Board, was exhausted in paying the Board's expenses in holding from one hundred and fifty to one hundred and fifty-seven institute meetings, while the local societies expended but about two-thirds of the three mills per capita allowance available for the payment of local expenses.

Under the new or amended law the State Board of Agriculture will receive three mills per capita for the support of Farmers' Institutes, as against two mills under the old law, which will make it possible to establish and hold fully fifty per centum more meetings under the direction of the Board than formerly, and thus enable the institute societies of the state to avail themselves of the full allowance under the law for the payment of local expenses.

Under the operation of the old law the State Board of Agriculture has always drawn and used for institute purposes the full allowance provided or, in round numbers, fifty-three hundred dollars, while the local institute societies have drawn for expenses about fifty-five hundred dollars, in round numbers, or about two-thirds of the funds available from the three mills per capita allowance.

Under the new or amended law the State Board of Agriculture will be allowed three mills per capita, or in round numbers, eight thousand dollars, the same as the allowance to the institute societies of the state for local expenses; and this seems to be a very fair division of the funds, for past experience goes to prove that the expenses borne by the State Board of Agriculture for institute purposes are very nearly equal to the expenditures of institute societies for local expenses.

In view of the largely increased facilities afforded, at a very small additional expense, it is believed the new *Cromley law* will be greatly appreciated by the farmers of the state and be one of the most popular placed on the statute books by the seventy-second general assembly.

The full text of the new or amended Cromley Institute law passed April 27, 1896, is as under:

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That an act entitled an act to provide for the organization and support of farmers' institutes, passed April 26th, 1890, be amended as follows:

That when twenty or more persons, residents of any county in the state, organize themselves into a farmers' institute society, for the purpose of teaching better methods of farming, stock raising, fruit culture and all branches of business connected with the industry of agriculture, and adopt a constitution and by-laws agreeable to rules and regulations furnished by the state board of agriculture; and when such society shall have elected proper officers and performed such other acts as may be required by the rules of the state board of agriculture, such society shall be deemed a body corporate.

SEC. 2. Not to exceed four farmers' institute societies organized under the provisions of this act, shall hold annual meetings under the auspices of the state board of agriculture in any one county in the state, and the state board of agriculture shall have power to determine the number and name the times and places for holding such institute meetings.

SEC. 3. When a society organized under the provisions of this act shall have held an annual farmers' institute meeting in accordance with the rules of the state board of agriculture, the secretary of said board shall issue certificates, one to the president of the farmers' institute society and one to the president of the state board of agriculture, setting forth these facts and, on the presentation of these certificates to the county auditor, he shall each year draw orders on the treasurer of the county as follows: based on the last previous national census, a sum equal to three mills for each inhabitant of the county in favor of the president of the state board of agriculture, and a sum equal to three mills for each inhabitant of the county in favor of the president of the farmers' institute society, where but one society is or-

ganized, but in counties where there are more than one farmers' institute society organized under the provisions of this act, and holding meetings under the auspices and by direction of the state board of agriculture, the said three mills for each inhabitant shall be equally apportioned among such societies, and warrants in the proper amounts issued to the respective presidents, and the treasurer of the county shall pay the same from the county fund: provided that in no county shall the total annual sum exceed two hundred and fifty dollars; and provided further, that the payment to any institute society shall not exceed the expense, as per detailed statement, provided in section four of this act.

SEC. 4. With each certificate of the secretary of the state board of agriculture to the county auditor, which certificate shall indicate the number of societies organized in the county and holding meetings by direction of the state board of agriculture, and before the auditor issues his order upon the treasurer there shall be filed with the auditor a detailed statement of the expenses of the institute for the current year, no part of which shall be for salaries of officers of the institute society; but this provision shall not apply to the order in favor of the president of the state board of agriculture, which board shall issue statement as required in section six of this act.

SEC. 5. At the annual farmers' institute meetings, held under the provisions of this act and under the auspices of the state board of agriculture, the said board shall furnish lecturers or speakers whose compensation and expense shall be paid by the board.

SEC. 6. At the close of each season's institute work, the state board of agriculture shall publish in pamphlet or book form, such lectures and papers delivered at the several institute meetings, as may seem of general interest and importance to the farmers, stock breeders and horticulturists of the state, copies of which shall be furnished the secretary of each institute society, and the balance issued to be for general distribution; the cost of preparing the matter and the distribution of the pamphlet or book to be paid by the state board of agriculture. Said board shall also publish, in such pamphlet or book, a detailed statement of its receipts under the provisions of this act and the disbursements on account of institute work.

SEC. 7. Said original act, entitled "An act to provide for the organization and support of farmers' institutes," passed April 26, 1890, is hereby repealed and this act shall take effect and be in force from and after its passage.

RULES

OF THE OHIO STATE BOARD OF AGRICULTURE FOR THE ORGANIZATION AND MANAGEMENT OF FARMERS' INSTITUTE SOCIETIES, ADOPTED MAY 26, 1896.

SECTION 1. Parties who contemplate organizing farmers' institute societies and farmers' institute societies already organized desiring to hold meetings under the auspices of the State Board of Agriculture, in accordance with the act of the General Assembly of Ohio, passed April 26, 1890, and amended April 27, 1896, must first present a petition to the State Board of Agriculture for the same, signed by twenty or more residents of the county, without regard to sex, but all signers must be of legal age. In order that the Board may act intelligently on such petitions, the petitioners should furnish replies to questions propounded by the State Board of Agriculture concerning proposed place of meeting, capacity of hall or building to be

occupied, railway facilities, etc. Blank petitions with the questions to be answered will be furnished on application, by the Secretary of the State Board of Agriculture, at Columbus.

SEC. 2. Said petitions should be filed with the Secretary of the State Board of Agriculture not later than the first day of September of any year. Earlier presentation will greatly facilitate the work of the Board in considering applications and assigning dates and speakers. Petitioners will be promptly notified of such action as the State Board of Agriculture may take.

SEC. 3. After the petition for the holding of an institute meeting shall have been granted, the petitioners will proceed to organize, if not already organized, by the election of a president, vice president, secretary, treasurer and an executive committee of three (the president and secretary to be ex-officio members of this committee making a committee of five), all to serve for the period of one year or until their successors are duly elected. After the first organization an election of officers shall be held during each annual institute meeting, only members of the society being entitled to vote. Of the officers, not more than two shall be elected who are residents of the same township. The society shall adopt a constitution and by-laws in harmony with the institute law of the state and these rules.

SEC. 4. As soon as any organization is completed it shall be reported to the Secretary of the State Board of Agriculture, with the name of the society, and the names and postoffice addresses of the officers, and a copy of the constitution and by-laws.

SEC. 5. The secretary of each institute society shall keep in a substantial book or books a record of all meetings of the executive committee and society, and a roll of the members, with the postoffice address of each; first, the original petitioners for the organization, followed by residents of the county or locality, of legal age, who, by enrolling their names in the secretary's book, become members of the society.

SEC. 6. When a petition has been granted and the society notified of the date assigned for its institute meeting, and the lecturers to be furnished by the State Board of Agriculture, the executive committee shall proceed in due time to make arrangements for the institute meeting, by engaging hall, selecting the local talent desired, arranging for music and all other details necessary for the successful holding of a farmers' institute meeting, and preparing a program which shall occupy the time assigned for the meeting. In arranging the program, time shall be allowed for discussion of the topics presented and for miscellaneous questions. The speakers sent by the State Board of Agriculture are to occupy not more than half the time of the institute meeting, and local talent, discussions and music the remaining time. The program should be published for general distribution at least two weeks in advance of the institute meeting, and at the same time a copy mailed to the Secretary of the State Board of Agriculture and to each speaker who is to take part. Societies should thoroughly advertise and use diligence and enterprise to create an interest among the people and to secure the largest possible attendance. Every citizen of the county and locality ought to be informed as to the time, place and nature of the institute meeting. The executive committee shall have full authority to audit and settle all accounts made for and in behalf of the institute society.

SEC. 7. All institute societies organized under the institute law of the state shall be strictly non-partisan and non-sectarian in every phase of their work, and no institute shall be conducted in the interest of any party, sect or society, but for the equal good of all citizens and farming communities.

SEC. 8. The presiding officers of the various institute societies of the State, holding meetings under the auspices of the State Board of Agriculture, should always and under all circumstances prohibit discussions of subjects other than those

pertaining to agriculture, horticulture, stock-breeding, etc.; anything of a sectarian or partisan character should not be discussed or commented upon either by speakers or members of institute societies; no criticisms of state, county or township officials should be tolerated under any circumstances.

SEC. 9. No fee shall be charged for admission to institute meetings held under the auspices of the State Board of Agriculture; they shall be public and free to all, the object being to impart agricultural knowledge and experience free to all persons sufficiently interested to attend. If any society desires to hold quarterly, monthly or weekly meetings during the year, the expense of the same may be met by admission fees, subscriptions, collections or sale of season tickets. Nothing in this section shall prevent voluntary contributions or subscriptions for securing speakers desired other than those sent by the State Board of Agriculture.

SEC. 10. Within ten days after the close of each institute meeting the secretary shall make a report to the Secretary of the State Board of Agriculture, blanks for which will be furnished. On receipt of such report by the Secretary of the State Board of Agriculture he will issue the certificate according to law, which will enable the society to draw the amount due from the county.

SEC. 11. A society or its executive committee may, on the call of the president, hold such business meetings as may be necessary to transact the business of the society and arrange for the annual institute meeting to be held under the auspices of the State Board of Agriculture; and the traveling expenses of the executive committee for such meetings may be paid as other items and charged with other expenses of the institute.

SEC. 12. When the secretary of a farmers's institute society shall send a written report to the Secretary of the State Board of Agriculture, as provided by Section 10 of these rules, he shall state the cost of the institute meeting, (not including expense of speakers sent by the State Board of Agriculture,) number in attendance during the institute meeting, speakers who filled appointments, speakers absent, whether speakers were acceptable or otherwise, and report any feature or matter of special interest.

SEC. 13. The State Board of Agriculture requires that lecturers employed by the Board shall devote their time and efforts to the discussion of such subjects as are clearly provided for by the institute law of the State, namely, "Farming, stock raising, fruit culture and all branches of business connected with the industry of agriculture."

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and the role of the auditor in ensuring the integrity of the financial statements. It emphasizes the need for transparency and accountability in the reporting process.

2. The second part of the document outlines the various methods and techniques used by auditors to verify the accuracy of the financial data. This includes a detailed examination of the accounting records, as well as the use of statistical sampling and other analytical procedures.

3. The third part of the document addresses the challenges and risks associated with the auditing process. It highlights the potential for errors and fraud, and discusses the measures that can be taken to minimize these risks. It also touches upon the importance of the auditor's independence and objectivity.

4. The fourth part of the document provides a summary of the key findings and conclusions of the audit. It discusses the overall health of the financial system and the implications of the audit results for the stakeholders. It also offers recommendations for improving the financial reporting process and enhancing the reliability of the financial statements.

5. The final part of the document is a conclusion that reiterates the importance of the auditing process and the role of the auditor in ensuring the integrity of the financial system. It emphasizes the need for continued vigilance and cooperation between all parties involved in the financial reporting process.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

THIRTEENTH ANNUAL REPORT

OF THE

OHIO CLIMATE AND CROP SERVICE

ISSUED IN CO-OPERATION WITH THE

OHIO STATE BOARD OF AGRICULTURE,

FOR THE YEAR BEGINNING

JANUARY 1, AND ENDING DECEMBER 31, 1895.

W. W. MILLER, Secretary State Board of Agriculture, Director.

H. W. RICHARDSON, Observer Weather Bureau, Assistant Director.

LETTER OF SUBMITTAL.

HON. W. W. MILLER, *Director :*

SIR:—I have the honor to submit herewith a report on the work of the Ohio Climate and Crop Service for the year 1895.

Very respectfully,

H. W. RICHARDSON,

Observer Weather Bureau, Assistant Director.

COLUMBUS, OHIO, *March, 1896.*

REPORT OF ASSISTANT DIRECTOR
OF THE
OHIO CLIMATE AND CROP SERVICE, 1895.

GENERAL REMARKS.

The work of the service was conducted as in previous years. Many branches were improved upon, climatic data collected and disseminated or brought forward into a more complete condition as regards the State, new features were introduced, and some work discontinued where considered unimportant and in the line of economy.

In January Hon. W. W. Miller succeeded Hon. L. N. Bonham as Secretary of the State Board of Agriculture and Director, and in July the present incumbent succeeded Mr. Chas. M. Strong as Assistant Director and representative of the Weather Bureau, United States Department of Agriculture. Mr. Strong had been identified with the Ohio Service for many years, and it is due him to state that the present flourishing condition of this service is the result of his untiring and well directed efforts; the condition of his health compelling him to locate in a new field of labor.

The \$2,000 usually appropriated by the Legislature provided for the employment of a clerk in the central office, the purchase and repair of meteorological instruments furnished to voluntary observers, and various incidental expenses connected with the maintenance of such service, other than the printing of bulletins, monthly and annual reports, and which items, by law, are included in the matter provided for by the State printing fund.

The aid received by the State service at the hands of the Government can not easily be estimated. By placing the work of the State service in the care of the local weather bureau office, co-operation on the part of the Government is secured, and such connection is accompanied by many valuable privileges to the State. With but one exception the clerical force at the central office is under pay of the United States Department of Agriculture. The use of the franking privilege saved to the State many hundreds of dollars as regards postage. Besides this, the Government defrayed the cost of all telegraph and telephone service in

connection with the dissemination of weather forecasts and warnings in the State; furnished flags and special supplies for the establishment and maintenance of display and voluntary observing stations, besides an enormous amount of other supplies used in connection with the distribution of forecasts and warnings, and forms necessary for reports of voluntary observers and crop correspondents.

The public is growing more and more appreciative of the work of the service each year. Climate and weather are subjects that everyone must consider, no matter what profession or pursuit followed, and such a service, if wisely administered, is of incalculable value, both directly and indirectly, to the citizens of the State. Agriculturists, manufacturers, mechanical, mining or civil engineers, merchants, producers and shippers of perishable products, transportation lines (rail, marine or otherwise), and citizens in every walk of life utilize the information received as best suits individual needs—whether it be data as to climate or the probable weather for the morrow.

The fourth annual convention of the American Association of Climate and Crop Services was held in Indianapolis, Ind., on October 16 and 17. Over thirty States were represented, and the convention, besides being well attended, was the most successful and satisfactory one yet held. Many plans were discussed and new ideas advanced as regards improved methods of collecting and disseminating climatic and weather data, and especially means by which rural districts could be reached with the weather forecasts and warnings. A full account of the proceedings of the convention is in process of publication, and copies will be distributed to those co-operating with the Ohio service as formerly. The convention adjourned to meet in Nashville, Tenn., in 1896, date not decided upon.

The issue of the Weekly Weather-Crop Bulletin was somewhat larger than usual—36,000 copies each week of the season from April to (including) September. These bulletins were all mailed under "franked" wrappers and no expense resulted to the State as regards postage. The bulletin is of direct value to the agriculturist and merchant, describing as it does, the effects of the weather upon crops and their progress from week to week from time of planting to harvest. The bulletin has become an indispensable adjunct to the commercial relations between the producers and the markets.

The meteorological data on record at the central office, as regards the various stations of the service, is being tabulated in a condensed form, and it is now possible to furnish concise information as to the more important characteristics of climate during the past thirteen years at many stations, and, in some instances, for a much greater period. Numerous demands for such information have received attention during the year.

Stations of observation are maintained at colleges and schools as follows: Akron, Buchtel College; Athens, Ohio University; Findlay, Findlay College; Granville, Denison University; Hiram, Hiram College; Marietta, Marietta College; Oberlin, Oberlin College; Columbus, Ohio State University; Tiffin, Heidelberg College; Westerville, Otterbein University; Wooster, Agricultural Experiment Station; Urbana, Urbana University; Dayton, Steele High School. The location of instruments at other schools and colleges is now under consideration, and every effort will be made to foster and encourage the interest already shown by such institutions in the study of climate and weather; and it is the intention where transfers of instrumental equipment are made that they be located at schools or colleges wherever possible.

The recommendation made by my predecessor, in his annual report for 1894, as regards inspection of stations, is heartily endorsed by myself: Besides the many inaccuracies that would be corrected by proper location of instruments, and special instructions where necessary, a personal acquaintance with the observers would result in much good.

Experience demonstrates the fact that, with the present number of stations (and which will hardly be increased during 1896), from ten to fifteen sets of new instruments are necessary each year to replace those broken or otherwise rendered unserviceable; and I would recommend the purchase of fifteen sets of maximum and minimum thermometers for use in 1896, besides the purchase of twelve 3-inch rain gauges. I would further recommend that, wherever practicable, the mercurial barometers now owned by this service be sold at the best figure obtainable—either to the voluntary observers in whose possession many of the barometers now are, or to other parties, and that arrangements be made (where possible) with manufacturers of meteorological instruments to exchange sets of maximum and minimum thermometers for the barometers. The observation of these instruments has been discontinued by this service, and the barometers are of value only to those in whose possession they happen to be.

Voluntary observers, display-men, forecast distributors and crop correspondents are assured that their work is appreciated alike by the public and the central office. Their work is entirely gratuitous and their reward comes chiefly in the form of personal satisfaction that they are public-spirited citizens who labor for the common good of many, and that they are founding and carrying on work that cannot fail to be of profit, not only to those of the present but also to future generations. Many of those now co-operating in various capacities have been identified with the Ohio Climate and Crop Service since its establishment in 1882.

The following tabulated statement shows distribution of forecasts and warnings, by either telegraph, telephone or mail, daily or as occasion required, in Ohio during 1895:

Character of Information and Means of Distribution.	Number of Places.
Frost warnings, only, as occasion required	78
Cold wave warnings, only, as occasion required	33
Emergency warnings, only, as occasion required	190
Forecasts (daily, except Sundays) and all warnings, when necessary	94
Forecasts and warnings by telephone (daily, except Sundays)	33
Railroad Bulletin and telegraph service (daily, except Sundays)	19
Total telegraph and telephone service	447
Forecasts and warnings in Ohio by means of weather maps issued from Weather Bureau offices in Cincinnati, Cleveland, Columbus, Sandusky, Toledo, Pittsburg, Pa., Parkersburg, W. Va., and Erie, Pa., (not considering maps issued for local use in those cities), (daily, except Sundays).	258
Forecasts and warnings, by mail on cards under logotype system, (daily, except Sundays, or as occasion required) from 72 distributing centres..	2,022
By telegraph and telephone service (both daily and special)	447
Total number of places reached	2,727

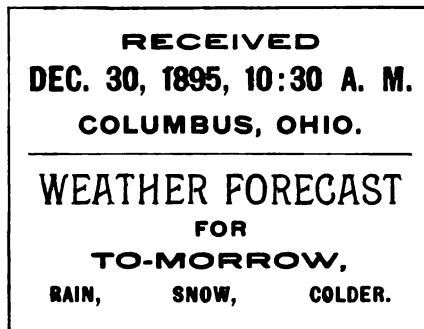
Display or sound signal stations were established during the year at 23 stations, and 9 were discontinued. In all there were 133 display or sound signal stations in operation.

The logotype system of distributing the forecasts and warnings continued to prove satisfactory. The system, in simplicity, consists in stamping the forecasts or warnings on postal cards, each distributor being furnished an outfit composed of an ink pad, logotype holder and rubber logotypes of words commonly used in forecasting weather conditions. Each place to which the cards are sent is furnished with a suitable bulletin board. Outside of the few Weather Bureau stations sending these cards over the State, all the other distributing centers (65) are furnished supplies of addressed cards from the Columbus office for the various places they in turn supply, one assistant being constantly employed stamping addresses on cards to be supplied to such distributing centers.

Steam whistles are proving very important factors as regards the dissemination of the forecasts and warnings. A simple code of long and short blasts is used and is easily memorized. These whistles ordinarily can be heard by people within a radius of three to five miles, and, if blown at regular hours, also serve as a standard of time. This method is being introduced in many sections of the State, and has also been in use in a number of places several years. As a direct means of

reaching the rural districts quickly and effectively, this method is not at present surpassed by any other, besides being comparatively inexpensive beyond first cost of whistle.

Another and new method, as regards the distribution of forecasts and warnings, is by means of the "back" or receiving stamps on letters intended for local distribution. A special stamp and outfit has been designed for this purpose, and quite a number of postmasters are now furnishing their patrons with weather forecasts stamped on the backs of letters. Among the first postmasters in Ohio to adopt this system may be mentioned those at Sandusky, Hamilton and Columbus. This plan or method of distributing the forecasts was proposed at the National State Weather Service Convention in Indianapolis, Ind., in October, by Mr. Frank P. Chaffee, Director, Alabama Climate and Crop Service, and, while yet in its experimental stage, the system has proven a success wherever operated, and is inexpensive. The following is a fair sample of the stamps generally in use:



The date and weather words are subject to daily change, but the remainder of the stamp is solid rubber. It takes only a few seconds to change the date line and the logotype weather words.

METEOROLOGICAL STATIONS.

The total number of Weather Bureau and voluntary observing stations in the State is 142, the Weather Bureau stations being located at Cleveland, Sandusky, Toledo, Cincinnati and Columbus (central office).

During the year stations were established at Basil, Berlin Heights, Dayton (No. 2), Hudson, Lancaster, Medina, New Moscow, Philo, and Urbana.

Stations were discontinued at Batavia, Guysville, Kilbourne, Northwood, Ridge, Steuben, Swanton, and Weymouth.

The usual meteorological data was furnished by Weather Bureau and voluntary observers during the year for use in the weekly weather-crop bulletins, the monthly and annual reports.

WEATHER CONDITIONS 1894 AND 1895.
TEMPERATURE (IN DEGREES, FAHRENHEIT.)

Seasons.	Monthly.				Departures From Normal.			
				State.				State.
	Northern.	Middle.	Southern.		Northern.	Middle.	Southern.	
Autumn, 1894 (September, October, November).....	51.9	52.5	54.8	53.1	+ 0.9	+ 0.7	+ 1.1	+ 0.9
Winter, 1894-5 (December, January, February)	24.2	25.1	27.7	25.6	- 3.5	- 4.1	- 4.7	- 4.2
Spring, 1895 (March, April, May)	47.3	49.2	51.9	49.4	+ 1.1	+ 0.6	+ 0.6	+ 0.8
Summer, 1895 (June, July, August)	70.5	72.1	74.4	72.4	+ 0.6	+ 1.2	+ 1.8	+ 1.2
Average for year 1894-5	48.5	49.7	52.2	50.1	- 0.2	- 0.4	- 0.3	- 0.3
Average for year 1893-4	50.6	51.7	54.3	52.2	+ 5.7	+ 4.6	+ 4.9	+ 5.0

PRECIPITATION (IN INCHES AND HUNDREDTHS.)

Autumn, 1894	8.85	7.66	5.86	7.46	+ 0.47	- 0.95	- 2.51	- 1.01
Winter, 1894-5	6.32	7.65	9.05	7.67	- 1.10	- 2.05	- 1.85	- 1.67
Spring, 1895	5.25	5.36	5.89	5.50	- 6.87	- 6.26	- 5.78	- 6.30
Summer, 1895	7.94	7.32	7.02	7.43	- 1.51	- 2.90	- 3.49	- 2.62
Total for year 1894-5	28.36	27.99	27.82	28.06	- 9.01	- 12.16	- 13.63	- 11.60
Total for year 1893-4	28.78	28.30	31.28	29.17	- 8.29	- 12.26	- 10.59	- 10.39

The winter of 1894-5 was unseasonably cold, but the excess in warmth during the previous fall and the summer months of '95 more than sufficed to counterbalance in favor of a slight excess for the crop year. 1895 goes on record as the dryest year since the establishment of the service, 28.46 inches of precipitation being the actual average for the State, a deficiency of 9.41 inches, and there occurred a deficiency during all the months of 1895 except in January, November and December, in which months a little more than the usual amount fell. The fall months of 1894 were dry also. Especial attention is invited to the charts accompanying this report, and which show graphically the distribution of heat and moisture over the State during 1895, and the average for thirteen years; besides these will be found a chart showing the dates (where data was obtainable) of the last killing frost in spring and the first killing frost in autumn of 1895 for the various stations; a study of these charts will disclose many facts of interest and value. The nearest approach to anything like normal precipitation was in the northeastern portion of the State, but in southeastern and western counties there was a marked deficiency. The drouth during 1895 was a most notable one and practically covered—in many districts—the nine months from February to including October. In many counties in the southern and western portions of the State streams and wells became dry or almost so, and the question of water became a most serious one as regards the needs of man and beast; the situation was, however, occasionally relieved, but not entirely so until November and December. Notwithstanding the many adverse conditions that prevailed during the year, the fact remains that in many portions of the State crops did fairly well on an average, except in some western counties where the drouth was most severely felt.

SYNOPSIS.

TEMPERATURE.

April 2d to 15th — Average conditions.
April 16th to 22d — Cool.
April 23d to May 13th — Warm.
May 14th to 27th — Cool.
May 28th to June 17th — Warm.
June 18th to 24th — Average conditions.
June 25th to July 1st — Warm.
July 2d to 15th — Slightly below average.
July 16th to 22d — Warm.
July 23d to 29th — Average conditions.
July 30th to August 5th — Cool.
August 6th to 19th — Slightly above average.
August 20th to 26th — Average conditions.
August 27th to September 2d — Warm.
September 3d to 9th — Average conditions.
September 10th to 16th — Warm.
September 17th to 23d — Abnormally warm.
September 24th to 30th — Warm fore part, cool latter portion.

RAINFALL.

April 2d to 8th — Deficient.
April 9th to 15th — Excessive.
April 16th to May 20th — Deficient.
May 21st to June 3d — Dry.
June 4th to 17th — Deficient.
June 18th to 24th — Nearly average.
June 25th to July 15th — Deficient.
July 16th to 22d — Slightly in excess.
July 23d to 29th — Deficient.
July 30th to August 5th — Dry.
August 6th to 12th — Slightly in excess.
August 13th to 19th — Deficient.
August 20th to 26th — Dry.
August 26th to September 2d — Above average.
September 3d to 9th — Above average northern section, deficient elsewhere.
September 10th to 16th — Deficient.
September 17th to 23d — Dry southern and western portions, nearly average elsewhere.
September 24th to 30th — Dry.

PROGRESS OF CROPS IN OHIO, AS AFFECTED BY WEATHER CONDITIONS DURING 1895.

The month of December, 1894, was marked by an excess in both temperature and precipitation. During January the temperature was slightly below the average, but precipitation was somewhat above, while February was characterized by abnormally cold weather and an unusual deficiency as regards precipitation. In March both temperature and precipitation were below the average. The snowfall during the winter, while perhaps not as ample nor as well distributed as usual, afforded a fair amount of protection to cereals in ground, but in those portions of the State where unusually light, considerable wheat was winter-killed. The cold weather that prevailed during January, February and March proved to be of considerable injury to peaches, but most fruit escaped serious damage. As a whole, the month of March was unfavorable and injurious to cereals in ground, and delayed farm work by the continued low night temperatures, freezing the ground and preventing its cultivation.

Week ending April 8th — Normal temperature with precipitation deficient. Oats and clover seeding well advanced; some clover coming up. Wheat starting to grow. Tobacco and early potato planting under way. Plowing for corn was general. Ground mellow and in fine condition. Grass made but little progress. Small fruits in fair shape. Fruit trees coming in bud.

Week ending April 15th — Temperature average, rainfall above, weather cloudy, heavy frosts 10th and 11th, no special damage. Wheat, oats, grass, barley, rye and clover decidedly improved. Wet ground delayed plowing. Some corn and millet sown. Gardens not all made. Fruit trees budding and promising, except peaches.

Week ending April 22d — Fair and cool with some frost, rainfall deficient. Growth of cereals retarded, but weather favored plowing for corn, some planted. Oats and clover coming up. Apples, peaches, plums and strawberries budding.

Week ending April 29th — Temperature above average, rainfall below, weather fair. Wheat thin and yellow in Northern section, improved elsewhere. Cool nights retarded grass, clover and pastures. Oats did well, also early potatoes. Corn planting progressed fairly. Fruit blooming.

Week ending May 6th — Excessive warmth and dryness retarded growth of wheat, oats, grass, potatoes and tobacco. Cereals fair, but need rain. Corn planting progressed. Early planted corn and potatoes coming up. Fruit bloom heavy.

Week ending May 13th — Warm, with rainfall deficient, but some improvement in wheat, oats and grasses where rain was sufficient. Corn and potatoes coming up. Tobacco hurt by drouth and insects. Frosts on 12th and 13th caused considerable damage to fruit, gardens and cereals.

Week ending May 20th — Cool, with rainfall deficient. Condition of crops materially changed. Traces of snow 14th. Frosts, 15th to including 18th, that on 17th was most severe; corn and potatoes were cut to the ground, many grapes and berries were killed, wheat, clover and barley damaged to some extent. Wheat heading out short. Oats and grass made some improvement. Cut worms and flies hurting crops.

Week ending May 27th — Dry and cool, with frosts from 20th to 23d inclusive, which killed greater portion of grapes and berries; corn that was up and some of the large fruit and wheat, oats and barley in low places were injured somewhat. Grass and tobacco affected by drouth. Strawberries ripening.

Week ending June 3d — Warm and very dry, scarcely any rain. All crops suffering. Tobacco plants dying. Replanted corn coming up. Potatoes recovering. Apples promising. Berries in bloom.

Week ending June 10th — Warm, drouth partially broken evening of 4th. Wheat, grass, corn, potatoes and gardens slightly improved. Replanted corn made some advance. Wheat heads filling and ripening. Some tobacco transplanted, plants scarce. Strawberry season well advanced.

Week ending June 17th—Warm. Rainfall light. Corn and potatoes made some advance; other crops retarded by drouth. Wheat ripening, heads only fair. Some wheat, clover and barley cut. Oats and grass short. Tobacco plants dying.

Week ending June 24th—Temperature and rainfall about average. Corn, oats, potatoes, pasturage and gardens benefited. Wheat harvest general in southern portion, some cut in middle section, ripening in northern. Barley, rye and clover yields light. Apples and pears promising.

Week ending July 1st—Warm, with deficient rainfall. Wheat harvest begun northern section, well advanced elsewhere. Hay cutting progressed. Oats, pastures, potatoes and tobacco slightly improved. Corn made some growth.

Week ending July 8th—Temperature and rainfall below average, rather dry middle and northern sections. Conditions favored wheat and hay harvest. Corn, oats, late potatoes and tobacco southern section improved, retarded elsewhere. Pastures poor. Water becoming scarce.

Week ending July 15—Rather dry with less warmth than usual. Favorable for haying and harvesting. Oats ripening, some cut. Corn in fair condition. All crops need soaking rain. Water scarce. Pastures poor.

Week ending July 22d—Warm, rainfall above average, except in western half, where drouth continues. Some improvement eastern portion. Conditions favored haying, oat harvest and wheat threshing. More rain needed. Tobacco suffering. Apples ripening.

Week ending July 29th—Temperature about average, rainfall deficient. Drouthy western portion; showers caused some improvement in eastern half. Wheat threshing well advanced. Oats turning out better than expected. Tobacco variable condition. Some tobacco topped.

Week ending August 5th—Cool and dry. Crops retrograding. Oats threshing fair. Corn fair on lowlands and black soil and is earing; on clay soil poor. Pastures about gone. Tobacco not doing well. Tree fruits ripening.

Week ending August 12th—Abnormally warm, some good rains, but poorly distributed. Drouthy western portion, improvement elsewhere. Tobacco poor. Some fall plowing done. Chinch bugs and grasshoppers still numerous in some localities. Millet did not do well. Water and pasturage scarce.

Week ending August 19th—Warm with deficient rainfall. Showers early and late in week caused some improvement. Tobacco, pastures, potatoes and many gardens poor. Corn, except on ridges and clay soil, in good condition. Buckwheat in bloom and filling well. Some millet cut. Early potatoes being dug. Melons, tomatoes, cucumbers and pumpkins promising. Grapes ripening.

Week ending August 26th—Temperature average—warm days, cool nights, dry. Crops at standstill or retrograding. Light frosts 22d in some places, no damage. Water very scarce in many counties. Fall plowing progressed slowly. Apples dropping badly. Some cider made. Plums ripening. A few grapes in market. Tobacco "firing" badly. Clover being cut and threshed for seed.

Week ending September 2d—Drouth broken. Weather warm. All vegetation shows improvement, but rain too late to materially benefit crops in some places. Ground in good condition for plowing. Water more plentiful. Pastures greening up.

Week ending September 9th—Average warmth, rainfall excessive in northern portion, deficient elsewhere. Light frost in some places on 2d, no damage. Crops continued to improve. Some fall seeding and corn cutting done. Some millet cut. Pastures better. Cider making in full blast. Corn ripening rapidly, some cut.

Week ending September 16th—Warm with rainfall somewhat deficient. A generally favorable week, except in western half of State where rains were light. Late potatoes being dug. Tobacco and corn cutting and fall seeding made fair progress. Pasturage better. Storm on 12th blew down some corn and fruit from trees, and washed out prepared wheat ground in many places. In western counties pastures are still poor and water scarce.

Week ending September 23d—Intensely warm in greater portion, a few light frosts early part, dry western and southern portions, but fair rainfall elsewhere. Wheat and rye seeding and corn and tobacco cutting made excellent progress. Hot sunshine ripened late corn very rapidly. Crops made some improvement in eastern half of State, at a standstill or retrograded where rain was insufficient. Some wheat and rye up. A little millet cut. Gardens fair. Clover threshing continued.

Week ending September 30th—Very warm fore part, cooler latter portion. Frosts 24th, 28th, 30th, no serious damage. Showers 23d, 25th and 26th, mostly light and scattered. Grass made but little, if any, progress. Rain badly needed in western counties. Wheat and rye seeding, clover seed threshing, potato digging, corn and tobacco cutting made rapid progress toward completion. Some corn husked and cribbed. Buckwheat cutting begun in northern and middle sections. Water scarce in some western counties. Apple picking general. Much cider and apple butter being made.

TABULATED STATEMENT OF PRINCIPAL FEATURES OF THE WEATHER FOR THE DIFFERENT MONTHS OF THE YEAR, IN OHIO, 1895.

Character of Data.	January.	February.	March.	April.
SOUTHERN SECTION.				
Mean temperature	26.2	21.6	39.4	53.9
Normal temperature	29.3	33.5	59.7	52.7
Actual precipitation	4.91	0.62	1.83	2.36
Normal precipitation	3.47	3.97	2.92	3.32
Snowfall	14.5	5.6	4.0	Traces.
MIDDLE SECTION.				
Mean temperature	22.7	19.1	35.0	51.7
Normal temperature	25.8	29.8	55.8	50.0
Actual precipitation	3.86	0.68	1.54	2.16
Normal precipitation	3.29	3.86	2.75	2.99
Snowfall	13.8	5.5	3.2	0.2
NORTHERN SECTION.				
Mean temperature	21.8	18.1	32.0	49.6
Normal temperature	24.6	27.3	32.9	47.5
Actual precipitation	3.24	0.78	1.40	1.80
Normal precipitation	2.68	3.28	2.44	2.56
Snowfall	15.5	5.8	4.4	0.3
STATE.				
Mean temperature	23.4	19.6	35.5	51.7
Normal temperature	26.6	30.2	38.1	50.1
Highest temperature, place and date	62 7th, New Waterford.	70 28th, Northwood.	86 30th, Georgetown.	90 25th, Logan.
Lowest temperature, place and date	-19 13th, Coalton, Cherry Fork.	-24 6th, Hillhouse.	-7 5th, Sullivan.	16 11th, Colebrook.
Actual precipitation	4.00	0.69	1.59	2.11
Normal precipitation	3.14	3.70	2.70	2.96
Greatest monthly precipitation, place	7 36, Kytiana.	2 65, Hillhouse.	4 12, New Alexandria.	4 12, Columbus.
Least monthly precipitation, place	1 66, Elyria.	0 13, Napoleon.	0 17, Wheeler.	0 10, Marion.
Greatest precipitation in any 24 hours, place and date	3 25, 6th and 7th, Fayetteville.	0 80 7th Stoutsville, 28th Wheeler.	1 50 1st, Bucyrus.	3 23, 7th and 8th, Columbus.
Snowfall	14 6	5 6	3 9	0 2
Number of days of precipitation	12	6	9	6
Clear days	7	11	10	11
Partly cloudy days	8	9	10	11
Cloudy days	16	8	11	8
Thunderstorms, dates	5 6 10 21 25 26	28th	8 14 15 20 23 to 29 31	1 6 7 8 11 12 13 21
Sleet, dates	5 6 8 9 10 16 18 24 25 26	3 4 17 18 21	1 7 8 9 11 12 to 17	2 13 14 15 16 22 24 26 27
Hail, dates	10 25	None reported.	None reported.	1 2 7 12 13 14 15 17 26
Aurora, dates	2 9 10 21 26 29	3 4 11 13 15 16 17 23 26 29	1 3 4 16 16 19	10 13
Direction of wind	S. W.	W.	S. W.	N. E.
Temperature in degrees Fahrenheit. zero. Snowfall in inches and tenths. Precipitation (rain and melted snow) in inches and hundredths. Minus sign preceding temperature indicates below zero.				

TABULATED STATEMENT OF PRINCIPAL FEATURES OF THE WEATHER, ETC.—CONTINUED.

Character of Data.	May.	June.	July.
SOUTHERN SECTION.			
Mean temperature	62.3	74.1	73.4
Normal temperature	61.3	71.9	74.3
Actual precipitation	1.70	2.69	1.90
Normal precipitation	3.73	4.03	3.09
Snowfall	Traces.	0	0
MIDDLE SECTION.			
Mean temperature	60.8	72.2	70.9
Normal temperature	59.9	69.9	72.4
Actual precipitation	1.66	2.27	2.12
Normal precipitation	4.22	3.82	3.26
Snowfall	Traces.	0	0
NORTHERN SECTION.			
Mean temperature	60.3	69.8	70.1
Normal temperature	58.1	69.1	71.7
Actual precipitation	2.06	2.44	1.97
Normal precipitation	5.07	3.77	3.00
Snowfall	Traces.	0	0
STATE.			
Mean temperature	61.1	72.0	71.6
Normal temperature	59.8	70.3	72.8
Highest temperature, place and date	102, 30th Milligan, 31st Warsaw.	105, 4th, Milligan.	106, 20th, Thurman.
Lowest temperature, place and date	19, 21st, Norwalk.	29, 7th, Norwalk, New Waterford.	34, 9th, Auburn.
Actual precipitation	1.80	2.47	2.00
Normal precipitation	4.34	3.87	3.12
Greatest monthly precipitation, place	4.49, Dupont.	5.41, Upper Sandusky.	5.86, Clarksville.
Least monthly precipitation, place	0.51, Lowell.	0.64, Wauseon.	0.63, Rosewood.
Greatest precipitation in any 24 hours, place and date	2.00, 2d New Paris, 10 and 11th, McArthur.	3.00, 26th, Logan.	3.00, 15th, Clarksville.
Snowfall	Traces.	0	0
Number of days .01 precipitation	7	7	6
Clear days	14	15	13
Partly cloudy days	11	10	13
Cloudy days	6	5	6
Thunderstorms, dates	2, 4 to 8, 10 to 13, 18, 19, 26, 27, 29, 30.	4, 5, 11 to 14, 19, 20, 22 to 28, 30.	2, 5, 7, 8, 9, 14, 15, 19, 20, 21, 22, 23, 26, 27, 30.
Sheet dates	13, 14	None.	None.
Hail dates	5 to 8, 10, 13, 14, 19, 21, 22.	4, 14, 21, 22, 24, 26.	15, 21.
Auroras, dates	7, 15, 17, 28, 29, 30.	13, 14, 15, 24, 25.	8, 13, 16 to 22.
Direction of wind	S. W.	S. W.	S. W.

Temperature in degrees Fahrenheit. Precipitation (rain and melted snow) in inches and hundredths. Minus sign preceding temperature indicates below zero. Snowfall in inches and tenths.

TABULATED STATEMENT OF PRINCIPAL FEATURES OF THE WEATHER, ETC.—CONTINUED.

Character of Data.	August.	September.	October.
SOUTHERN SECTION.			
Mean temperature.....	75.8	71.4	48.8
Normal temperature.....	71.8	66.3	52.8
Actual precipitation.....	2.43	1.16	1.17
Normal precipitation.....	3.89	2.65	2.49
Snowfall.....	0	0	Trace.
MIDDLE SECTION.			
Mean temperature.....	73.1	68.5	46.5
Normal temperature.....	70.4	64.8	51.1
Actual precipitation.....	2.93	1.56	1.11
Normal precipitation.....	3.12	2.92	2.86
Snowfall.....	0	Trace.	Traces.
NORTHERN SECTION.			
Mean temperature.....	71.6	67.2	45.8
Normal temperature.....	68.8	63.4	50.4
Actual precipitation.....	3.53	2.26	1.88
Normal precipitation.....	2.68	2.94	2.55
Snowfall.....	0	Traces.	0.6
STATE.			
Mean temperature.....	73.5	69.0	46.9
Normal temperature.....	70.3	64.8	51.4
Highest temperature, place and date.....	103.9th, 17th C'p Dennison, 9th Clifton, Thurman, 31, 2d, New Waterford.	105, 20th, Hillsboro.	84, 3d Hebbardsville, 5th New Paris.
Lowest temperature, place and date.....	0.70, Cedarville.	25, 15th and 28th, New Waterford.	8, 30th, Coalton.
Actual precipitation.....	3.06	1.66	1.22
Normal precipitation.....	6.53, Demas.	2.84	2.47
Greatest monthly precipitation, place.....	0.70, Cedarville.	5.85, Harbor.	2.97, Harbor.
Least monthly precipitation, place.....	2.12, 6th, Millport.	Traces, Greenfield.	Traces, Dupont.
Greatest precipitation in any 24 hours, place and date.....	0	8.28, 12th, Wooster.	1.70, 11th & 12th Vermilion, 12th Steuben.
Snowfall.....	0	Traces.	0.2
Number of days of precipitation.....	8	5	4
Clear days.....	15	15	17
Partly cloudy days.....	11	10	9
Cloudy days.....	5	5	5
Thunderstorms, dates.....	3 to 7, 9 to 12, 17 to 20, 24, 26 to 31.	3 to 7, 9, 10, 12 to 19, 23, 25, 26, 30.	11, 24, 27, 28, 31.
Sleet, dates.....	None	30.	1, 8, 9, 27, 31.
Hail, dates.....	3, 6, 17, 24, 28.	7, 9, 12, 29, 30.	15, 20, 27.
Auroras, dates.....	9, 10, 25.	1, 12, 15, 17, 18.	7, 11 to 16, 30.
Direction of wind.....	S. W.	S. W.	S. W.

Temperature in degrees Fahrenheit. Precipitation (rain and melted snow) in inches and hundredths. Minus sign preceding temperature indicates below zero. Snowfall in inches and tenths.

TABULATED STATEMENT OF PRINCIPAL FEATURES OF THE WEATHER, ETC. — CONCLUDED.

Character of Data.	November.	December.	Means or Totals, Highest or Lowest for Year.	Averages for 15 Years.
SOUTHERN SECTION.				
Mean temperature	43.2	36.1	52.2	52.5
Normal temperature	42.2	34.7		52.5
Actual precipitation	8.89	3.38	27.54	38.72
Normal precipitation	3.02	2.64		38.72
Snowfall	0.2	3.2	27.5	38.72
MIDDLE SECTION.				
Mean temperature	41.0	33.6	49.6	50.1
Normal temperature	39.7	32.1		50.1
Actual precipitation	4.34	8.93	28.16	38.46
Normal precipitation	3.20	2.66		38.46
Snowfall	0.6	7.2	30.5	38.46
NORTHERN SECTION.				
Mean temperature	39.6	31.9	48.1	48.7
Normal temperature	39.2	31.2		48.7
Actual precipitation	4.69	4.25	29.69	36.46
Normal precipitation	3.00	2.49		36.46
Snowfall	2.2	10.8	39.6	36.46
STATE.				
Mean temperature	41.3	33.9	50.0	50.5
Normal temperature	40.4	32.7		50.5
Highest temperature, place and date	85, 6th and 7th, Hillsboro.	79, 20th, Coalton.	106, 20th July, Thurman.	
Lowest temperature, place and date	3, 21st, Norwalk.	— 13, 13th, Warsaw.	— 24, 6th Feb., Hillhouse.	
Actual precipitation	4.11	3.86	28.46	37.88
Normal precipitation	3.07	3.80		37.88
Greatest monthly precipitation, place	6.35, Oberlin.	6.72, Wauseon.	7.36, January, Cynthia.	
Least monthly precipitation, place	0.87, Thurman.	1.65, Thurman.	Traces, Sept., Greenfield; Oct., Dupont.	
Greatest precipitation in any 24 hours, place and dates	2.83, 25th and 26th, Wauseon.	2.21, 26th, Vanceburg.	3.33, April 7th and 8th, Columbus.	
Snowfall	1.0	7.1	32.6	125
Number of days .01 precipitation	9	10	89	117
Clear days	8	8	143	122
Partly cloudy days	13	16	119	126
Cloudy days	23, 25	None reported.	103	
Thunderstorms, dates	17 to 20, 24, 25, 26.	12, 26, 27, 30, 31.	119	
Sleet, dates	None reported.	None reported.	56	
Hail, dates	2, 4, 10, 11, 13.	None reported.	42	
Aurora, dates	S. W.	S.	65	
Direction of wind			S. W.	

Temperature in degrees Fahrenheit. Precipitation (rain and melted snow) in inches and hundredths. Minus sign preceding temperature indicates below zero. Snowfall in inches and tenths.

LIST OF STATIONS REPORTING TEMPERATURE AND PRECIPITATION
DATA, ETC., MONTHLY.

No.	Station.	County.	Observer.
64a	Akron	Summit	Prof. H. V. Egbert.
31b	Annapolis	Jefferson	Jas. W. Barnes.
69a	Ashland	Ashland	Dr. P. H. Clark.
54b	Arcanum	Darke	W. H. Tillman.
5a	Athens	Athens	Prof. Eli Dunkle.
62c	Atwater	Portage	R. Whittlesey.
61a	Auborn	Geauga	L. L. Reed.
70a	Bangorville	Richland	S. M. Painter.
13c	Basil	Fairfield	W. D. Rauch.
49a	Bellefontaine	Logan	Wm. Barringer.
28b	Bethany	Butler	S. Williamson.
78b	Benton Ridge	Hancock	J. W. Powell.
65d	Binola	Cuyahoga	B. B. Hazlitt.
61b	Bissell	Geauga	J. W. Scott.
72c	Berlin Heights	Erie	S. L. Hill.
68b	Big Prairie	Wayne	G. R. Aylesworth.
39c	Bladensburg	Knox	Chas. Elliott.
20a	Bloomington	Fayette	S. R. Morris.
22b	Bloomington	Clinton	John B. Peele.
79a	Bowling Green	Wood	G. C. Housekeeper.
76a	Bucyrus	Crawford	John R. Hopley.
34b	Canal Dover	Tuscarawas	Ed. S. Slingluff.
63a	Canton	Stark	Prof. Chas F. Stokey.
29b	Camp Dennison	Hamilton	H. H. Pinkvoss.
35a	Cambridge	Guernsey	S. Mehaffey.
43a	Cardington	Morrow	R. A. Beatty.
33a	Carrollton	Carroll	Prof. W. H. Ray.
21a	Cedarville	Green	Saml. Cresswell.
55a	Celina	Mercer	Prof. W. F. McDaniel.
18b	Cherry Fork	Adams	T. S. Wasson.
29a	Cincinnati	Hamilton	U. S. Weather Bureau.
14a	Circleville	Pickaway	S. W. Courtright.
22a	Clarksville	Clinton	E. T. M. Williams.
65a	Cleveland	Cuyahoga	U. S. Weather Bureau.
65b	Cleveland	Cuyahoga	G. A. Hyde.
21b	Clifton	Green	Chas. S. Hatfield.
9a	Coalton	Jackson	J. A. Sell.
59b	Colebrook	Ashtabula	Leonidas Reeve.
41a	Columbus	Franklin	U. S. Weather Bureau.
26a	Dayton	Montgomery	Mrs. E. E. L. Boyer.
26b	Dayton	Montgomery	Prof. Malcolm Booth.
83a	Defiance	Defiance	J. Heilshorn.
30a	Demos	Belmont	B. R. Ault.
85c	Dupont	Putnam	E. W. Dimock.
57b	Ellsworth	Mahoning	A. C. Allen.
66b	Elyria	Lorain	C. W. Goodspeed.
23b	Fayetteville	Brown	Jno. M. Campbell.
78a	Findlay	Hancock	Prof. A. C. Redding.
75a	Fostoria	Seneca	Robbins Bros.
15a	Frankfort	Ross	O. A. Cory.
62b	Garrettsville	Portage	S. M. Luther.
23a	Georgetown	Brown	Dr. Thos. W. Gordon.
40a	Granville	Licking	Horace A. Stokes.
40c	Gratiot	Licking	W. B. Longstreth.
19b	Greenfield	Highland	O. E. Foulke & Son.
56a	Green Hill	Columbiana	J. E. Bentley.
54a	Greenville	Darke	C. L. Katzenberger.
4b	Hackney	Morgan	J. Conn.
8a	Hanging Rock	Lawrence	James Bull.

LIST OF STATIONS REPORTING TEMPERATURE AND PRECIPITATION
DATA, ETC., MONTHLY — CONTINUED.

No.	Station.	County.	Observer.
59a	Harbor	Ashtabula	Rev. Edward Seymour.
86a	Hedges	Paulding	Wm. Twohey.
5c	Hebbardsville	Athens	J. E. Boyles.
60a	Hillhouse	Lake	J. W. Doncaster.
19a	Hillsboro	Highland	J. N. Hogsett.
62a	Hiram	Portage	Prof. Geo. H. Colton.
64b	Hudson	Summit	Dr. W. I. Chamberlain.
28a	Jacksonboro	Butler	Dr. J. B. Owsley.
50a	Kenton	Hardin	L. J. Demorest.
42a	Kilbourne	Delaware	B. F. Longwell.
38a	Killbuck	Holmes	Geo. W. Nowells.
13b	Lancaster	Fairfield	Ransom L. Renshaw.
85a	Leipsic	Putnam	S. W. Roberts.
39b	Levering	Knox	J. C. Levering.
11a	Logan	Hocking	Dr. G. W. Dollison.
58a	Lordstown	Trumbull	W. S. Dean.
2a	Marietta	Washington	Prof. J. C. Shedd.
44a	Marion	Marion	E. H. Raffensperger.
10a	McArthur	Vinton	M. B. Cooley.
4a	McCounelsville	Morgan	C. H. Morris.
67a	Medina	Medina	Forest Clark.
39a	Milfordton	Knox	L. F. Burgess.
12a	Milligan	Perry	S. B. Eveland.
56b	Millport	Columbiana	G. F. Copeland.
82a	Montpelier	Williams	Simon Waterston.
84a	Napoleon	Henry	A. C. Senter.
31a	New Alexandria	Jefferson	Jos. A. Hook.
63b	New Berlin	Stark	C. Hall.
51a	New Bremen	Auglaize	Edmund Grothans.
34a	Newcomerstown	Tuscarawas	Dr. A. M. Beers.
14c	New Holland	Pickaway	W. W. Gocley.
37b	New Moscow	Coshocton	T. Sproule.
27a	New Paris	Preble	W. P. Mills.
56c	New Waterford	Columbiana	Sam. C. Scott.
48a	North Lewisburg	Champaign	H. D. Gowey.
65c	North Royalton	Cuyahoga	S. Edgerton.
71a	Norwalk	Huron	Geo. Lamkin.
66a	Oberlin	Lorain	Prof. F. F. Jewett.
41b	O. S. University	Franklin	Prof. H. C. Lord.
58c	Orangeville	Trumbull	E. U. Hyde.
85b	Ottawa	Putnam	J. D. Huddle.
40b	Pataskala	Licking	J. W. Ridenour.
34c	Peoli	Turcarawas	A. M. Tinerman.
36b	Philo	Muskingum	L. C. Burkholter.
47a	Plattsburg	Clark	O. N. Stewart.
6a	Pomeroy	Meigs	Dr. D. N. Allard.
17a	Portsmouth	Scioto	Dr. D. B. Cotton.
84b	Ridgeville Corners	Henry	W. T. Chapman.
24b	Ripley	Brown	J. W. Gardner.
45a	Richwood	Union	Henry Highbargain.
68c	Rittman	Wayne	J. B. Gish.
73a	Rocky Ridge	Ottawa	Anson Green.
48b	Rosewood	Champaign	Geo. Dormire.
72a	Sandusky	Erie	U. S. Weather Bureau.
67b	Sharon Center	Medina	T. G. Briggs.
70c	Shenandoah	Richland	T. B. Arnett.
52a	Sidney	Shelby	H. B. Blake.
19c	Sinking Spring	Highland	Dr. L. F. House.
25a	Springboro	Warren	Geo. Olinger.

LIST OF STATIONS REPORTING TEMPERATURE AND PRECIPITATION
DATA, ETC., MONTHLY — CONCLUDED.

No.	Station.	County.	Observer.
21c	Spring Valley.....	Green	Job Holland.
13a	Stoutsville	Fairfield	G. S. Baker.
80b	Sylvania	Lucas	N. C. Scott.
7a	Thurman	Gallia	D. D. Thomas.
75b	Tiffin	Seneca	T. H. Sonnedecker.
80a	Toledo	Lucas	U. S. Weather Bureau.
77a	Upper Sandusky.....	Wyandot	Prof. F. W. Wenner.
48c	Urbana.....	Champaign	Prof. Jno. H. Williams.
88a	Van Wert.....	Van Wert	W. M. Smith.
18a	Vanceburg	Adams	W. F. Kenyon.
72b	Vermillion	Erie.....	W. H. Todd.
74a	Vickery	Sandusky	J. W. Barr.
14d	Walnut.....	Pickaway	J. Courtright.
58b	Warren.....	Trumbull	M. D. McCorkle.
37a	Warsaw	Coshocton	Jno. Foy Elder.
81a	Wauseon	Fulton	Thos. Mikesell.
16a	Waverly	Pike	David Lorback.
25b	Waynesville	Warren	E. B. Michener.
66c	Wellington.....	Lorain	C. F. West.
41c	Westerville.....	Franklin	Prof. Jno. Haywood.
60c	Wheeler.....	Lake	Ettie S. Clark.
60b	Willoughby	Lake	C. J. Richardson.
68a	Wooster.....	Wayne	Ag. Ex. Station.
57a	Youngstown.....	Mahoning.....	A. G. Frost.

FORECASTS BY MAIL IN OHIO, LOGOTYPE SYSTEM.

(DAILY, EXCEPT SUNDAYS.)

Distributing Center.	Distributor.	Number of Places Supplied.
Alliance, O.	Postmaster	29
Ashland, O.	F. E. Myers & Son	7
Batavia, O.	Allen T. Cowan	13
Bellefontaine, O.	Wm. Barringer	27
Bowerston, O.	Postmaster	37
Canfield, O.	J. K. Lowne	13
Canal Winchester, O.	M. C. Whitehurst & Sons.	5
Cambridge, O.	Postmaster	39
Chardon, O.	Postmaster	5
Chagrin Falls, O.	Postmaster	11
Chillicothe, O.	Postmaster	38
Coldwater, O.	Postmaster	37
Circleville, O.	S. W. Courtright	25
Cincinnati, O.	Observer Weather Bureau	119
Cleveland, O.	Observer Weather Bureau	113
Columbus, O.	Observer Weather Bureau	293
Dayton, O.	Postmaster	87
Defiance, O.	N. G. Woodward	7
Delaware, O.	Postmaster	18
Eaton, O.	Postmaster	8
Erie, Pa.	Observer Weather Bureau	6
Findlay, O.	Prof. A. C. Redding	17
Fostoria, O.	Robbins Bros	27
Garrettsville, O.	Postmaster	7
Gaysport, O.	J. M. Hutcheson	18
Galion, O.	J. W. Marvin	7
Greenville, O.	J. C. Weaver	28
Hector, O.	E. C. Thrall	11
Hillsboro, O.	T. A. Dean	39
Ironton, O.	Emil Arnold	26
Jackson, O.	Ambrose Leach	21
Kenton, O.	W. W. Snodgrass	19
Lima, O.	Watson & Co.	17
Mt. Vernon, O.	A. M. Stadler	37
Manchester, O.	T. W. Connelly	5
Minerva, O.	Byron Greenwood	13
Middletown, O.	W. M. Sullivan	14
Millersburg, O.	Postmaster	19
Mansfield, O.	Postmaster	30
Minster, O.	J. B. Goeke	10
Medina, O.	A. T. Root	28
Marietta, O.	A. D. Alderman	21
New Waterford, O.	S. C. Scott	5
New Philadelphia, O.	E. R. Parmalee	15
Norwalk, O.	Hoyt & Jackson	3
New Holland, O.	Butterworth & Slabach	5
Orville, O.	Postmaster	11
Portsmouth, O.	Chas. C. Seebohm & Co.	34
Piqua, O.	Postmaster	26
Parkersburg, W. Va.	Observer Weather Bureau	57
Pittsburg, Pa.	Observer Weather Bureau	6

A. R.

FORECASTS BY MAIL IN OHIO, LOGOTYPE SYSTEM — CONCLUDED.

Distributing Center.	Distributor.	Number of Places Supplied.
Ravenna, O	W. S. Krake	13
Rittman, O	H. S. Elliott	16
Radcliff, O	Postmaster	31
Sidney, O	W. H. D. Thompson	33
Sherodsville, O	Postmaster	10
Springboro, O	W. H. Siegfried	2
Sandusky, O	Observer Weather Bureau	17
Tiffin, O	Prof. T. H. Sonnedecker	10
Toronto, O	C. H. Stoll	6
Toledo, O	Observer Weather Bureau	149
Urbana, O	E. J. McGown	32
Waverly, O	Postmaster	39
Wellington, O	C. W. Arner	20
Warren, O	F. L. Wilson	16
Wooster, O	Postmaster	4
Washington C. H., O	O. D. Smith	22
Wilmington, O	J. T. Arnold	8
Warsaw, O	John Foy Elder	12
Woodsfield, O	Postmaster	41
Xenia, O	R. T. Stewart	9
Zoar Station, O	C. E. Ehler	19
Total .....	.....	2,022

SUMMARY BY YEARS.

	1883.	1884.	1885.	1886.
Mean temperature.....	49° 4	50 6.....	48° 0.....	49° 6.....
Highest temperature.....	98° August 22, Waverly	99° 0 Sept. 28, Oct. 1, Ironton.....	101° 0 July 21, O. S. University	98° 6 July 7, Wauseon.....
Lowest temperature.....	-17° 5 January 22, Wauseon.....	-31° 0 January 25, Sidney	-31° 0 January 29, Paulding.....	-21° 5 January 12, Waverly.....
Range of temperature	115° 5	138° 0	132° 0	120° 1
Mean daily range of temperature	19° 8	20° 5	20° 4	20° 2
Greatest daily range of temperature.....	53° 2 March 18, Wauseon	50° Sept. 5, College Hill, Dec. 4, Hanging Rock	58° 5 January 30, Sidney	57° December 11, Paulding.....
Least daily range of temperature	0° 5 December 28, Waverly	1° 1 February 6, Wauseon.....	1° 0 April 18, Hiram; December 31, Logan.....	1° 0 March 27, Granville.....
Number of clear days	98.2	116.7	103.0	118.4
Number of fair days.....	135.4	118.3	132.8	125 7
Number of cloudy days.....	130.4	131.1	128.2	121
Number of days rain fell	146	145	147 7	130 7
Mean yearly rainfall	44.98 inches	40.19 inches	38 08 inches	36.71 inches.....
Mean daily rainfall	0.12 inch	0.11 inch	0 10 inch	0.10 inch.....
Greatest rainfall	50.37 inches, Quaker City.....	47.64 inches, Logan.....	43 73 inches, Hiram	48.11 inches, Hanging Rock.....
Least rainfall.....	32.79 inches, Toledo.....	28.70 inches, Toledo.....	33.19 inches, Toledo.....	27.37 inches, Youngstown.....
Mean monthly rainfall.....	3.67 inches	3.35 inches	3.17 inches.....	3.06 inches.....
Mean No. of clear days per month.....	8.2	9.7	8.6	9.9
Mean No. of fair days per month.....	11.3	9.9	11.1	10.5
Mean No. of cloudy days per month	10.9	10.9	10.7	10.1
Mean No. of rainy days per month	12.2	12.0	12.3	10.6
Prevailing direction of wind	S. W.	S. W.	S. W.	S. W.

SUMMARY BY YEARS—CONTINUED.

	1887.	1888.	1889	1890.
Mean temperature.....	51.4.....	49.6.....	51.1.....	52.4.....
Highest temperature.....	108.0 July 18, Pomeroy.....	102.0 June 18 and 20, Pomeroy; August 3, Logan.....	99.0 August 31, Georgetown.....	103.1 Aug. 3, North Lewisburg.
Lowest temperature.....	-21.0 January 7, Paulding.....	-15.0 Jan 27, Wapakoneta.....	-13.5 February 24, Jefferson.....	-4.0 March 7, Jefferson.
Range of temperature.....	129.0.....	117.0.....	113.0.....	107.1.....
Mean daily range of temperature.....	21.2.....	19.8.....	19.3.....	19.0.....
Greatest daily range of temperature.....	57.0 April 11, Findlay.....	50.0 May 2 and June 18, Pomeroy.....	53.0 March 30, Athens.....	49.5 April 11, Yellow Springs.
Least daily range of temperature.....	1.0 January 15 and April 16, Wooster and Logan.....	1.2 January 16, Youngstown.....	1.0 January 5, Fostoria.....	1.0 Dec. 17, New Alexandria.
Number of clear days.....	113.8.....	106.7.....	112.8.....	103.4.....
Number of fair days.....	127.3.....	123.4.....	113.8.....	121.3.....
Number of cloudy days.....	123.9.....	133.9.....	136.4.....	140.3.....
Number of days rain fell.....	130.9.....	124.7.....	114.8.....	149.4.....
Mean yearly rainfall.....	33.63 inches.....	39.64 inches.....	33.41 inches.....	50.33 inches.
Mean daily rainfall.....	0.09 inch.....	0.11 inch.....	0.09 inch.....	0.14 inch.
Greatest rainfall.....	44.35 inches, Georgetown.....	52.04 inches Newcomertown.....	49.50 inches, West Milton.....	65.39 inches, Demos.
Least rainfall.....	25.64 inches Oberlin.....	25.86 inches, Toledo.....	21.32 inches, Wapakoneta.....	33.61 inches, Toledo.
Mean monthly rainfall.....	2.80 inches.....	3.30 inches.....	2.79 inches.....	4.19 inches.
Mean No. of clear days per month.....	9.5.....	9.1.....	9.4.....	8.6.....
Mean No. of fair days per month.....	10.6.....	10.3.....	9.5.....	10.1.....
Mean No. of cloudy days per month.....	10.3.....	11.2.....	11.5.....	11.7.....
Mean No. of rainy days per month.....	10.1.....	10.4.....	9.6.....	12.4.....
Prevailing direction of wind.....	S. W.....	S. W.....	S. W.....	S. W.....

SUMMARY BY YEARS—CONTINUED.

	1891.	1892.	1893.	1894.
Mean temperature	52°.	50°.	52° 3.	50° 3.
Highest temperature	101° Aug. 10, No. Lewisburg.	106° July 26, Waverly.	102° June 19, Greenfield.	105° July 18 and 19, Hedges.
Lowest temperature	—5° March 5, Wapakoneta.	—35° January 20, Montpelier.	—24° Jan. 11, Milligan; 15, Van Wert.	—27° December 29, Coalton.
Range of temperature	106°.	128°.	128°.	132°.
Mean daily range of temperature	20°.	19°.	22°.	23°.
Greatest daily range of temperature	50° April 27, Pomeroy; 30, Waverly.	51° September 25, Weymouth.	54° August 9, Bowling Green; September 5 and 6, Coalton.	60° October 19, New Waterford.
Least daily range of temperature	2° January 2, Canton.	0° Jan. 13, New Holland.	1° January 4, Cambridge.	1° February 7, Auburn.
Number of clear days	131.	111.	122.	138.
Number of fair days	106.	126.	123.	126.
Number of cloudy days	128.	129.	120.	101.
Number of days rain fell	120.	121.	113.	100.
Mean yearly rainfall	38.61 inches.	37.15 inches.	39.63 inches.	29.75 inches.
Mean daily rainfall	0.11 inch.	0.10 inch.	0.11 inch.	0.06 inch.
Greatest rainfall	48.15 inches, Georgetown.	52.55 inches, Wauscon.	50.88 inches, Wheeler.	30.85 inches, North Lewisburg.
Least rainfall	27.12 inches, Toledo.	25.86 inches, Pomeroy.	23.71 inches, Toledo.	20.38 inches, Pomeroy.
Mean monthly rainfall	3.22 inches.	3.10 inches.	3.30 inches.	2.48 inches.
Mean No. of clear days per month	11.	9.	10.	12.
Mean No. of fair days per month	9.	10.	10.	10.
Mean No. of cloudy days per month	11.	11.	10.	8.
Mean No. of rainy days per month	10.	10.	9.	8.
Prevailing direction of wind	S. W.	S. W.	S. W.	S. W.

SUMMARY.

	1885	1883-1885
Mean temperature	50° 5'	50° 5'
Highest temperature	106° July 20, Thurman	108° July 18, 1887, Pomeroy.
Lowest temperature	-24° February 6, Hillhouse	-34° January 25, 1884, Sidney.
Range of temperature	130°	142°
Mean daily range of temperature	28°	21° 3'
Greatest daily range of temperature	50° Jan. 15, New Waterford, and Mich. 29, O. S. U.	60° October 19, 1891, New Waterford.
Least daily range of temperature	0° February 7, Kilbourne	0° Jan. 13, 1892, New Holland, & Feb. 7, 1895, Kilbourne.
Number of clear days	113	117
Number of fair days	119	122
Number of cloudy days	103	126
Number of days rain fell	89	125
Mean yearly rainfall	28.46	37.87
Mean daily rainfall	0.08	0.10
Greatest rainfall	38.34 inches, Hillhouse	65.39 inches, Demos, 1890
Least rainfall	20.58 inches, Celina	29.28 inches, Pomeroy, 1894.
Mean monthly rainfall	2.29 inches	3.14
Mean No. of clear days per month	12	10
Mean No. of fair days per month	10	10
Mean No. of cloudy days per month	9	10
Mean No. of rainy days per month	7	10
Prevailing direction of wind	S. W.	S. W.

TABLE SHOWING MONTHLY AND ANNUAL MEAN TEMPERATURE FOR YEAR BEGINNING JANUARY 1, 1895, AND
ENDING DECEMBER 31, 1895

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean.
64 A...	Akron	22.4	19.3	32.4	50.1	61.1	72.1	69.9	71.7	67.2	45.6	40.8	32.8	48.8
61 B...	Annapolis	22.7	18.8	33.0	50.1	60.3	74.1	69.6	70.2	67.3	47.1	42.2	33.4	49.1
69 A...	Ashland	21.0	17.7	31.8	50.5	60.5	70.2	69.0	70.9	63.5	44.1	39.0	31.7	47.7
5 A...	Athens	26.9	21.2	39.5	55.1	61.8	73.2	71.6	70.9	71.3	48.4	...	...	...
61 A...	Auburn	19.5	15.4	29.5	48.1	57.6	67.2	65.6	67.5	63.1	43.4	36.6	30.0	45.3
70 A...	Bangorville	21.1	17.1	32.8	50.8	60.7	73.0	71.7	72.2	67.3	45.2	39.2	31.4	48.8
49 A...	Bellefontaine	22.7	20.0	35.8	52.2	60.4	72.1	71.2	72.2	68.2	45.7	40.7	31.9	49.3
28 B...	Bethany	23.9	20.1	38.7	53.0	61.4	73.3	72.3	73.5	70.6	47.5	39.1	32.4	51.1
78 A...	Benton Ridge	24.7	20.7	34.0	52.2	61.4	73.4	72.3	73.5	68.5	47.0	41.1	33.0	50.5
65 D...	Binola	24.7	20.7	33.7	51.3	64.1	73.1	71.0	71.0	68.1	46.1	41.1	33.0	50.5
61 B...	Bissell	20.0	17.1	29.8	48.7	60.1	71.1	69.1	69.6	66.9	45.3	39.8	31.4	47.4
72 C...	Berlin Heights	21.3	18.1	32.1	48.9	63.6	71.8	69.8	71.2	67.0	44.8	41.0	31.2	48.5
68 B...	Big Prairie	21.3	18.3	31.4	51.6	61.8	70.4	69.3	71.1	67.1	44.8	40.0	...	...
39 C...	Bladensburg	21.3	18.3	31.4	51.6	61.8	70.4	69.3	71.1	67.1	44.8	40.0	...	...
20 A...	Bloomington	24.7	21.1	38.1	52.8	60.8	73.9	72.8	74.9	71.3	48.5	42.8	31.0	48.2
79 A...	Bowling Green	19.7	17.3	32.1	49.8	60.8	71.7	71.1	72.1	69.0	45.5	38.3	...	...
76 A...	Bucyrus	22.8	18.2	33.1	52.8	62.9	71.9	71.8	72.5	68.8	45.2	38.8	32.4	49.1
34 B...	Canal Dover	22.8	20.2	33.5	50.3	60.1	70.0	69.0	72.1	67.6	46.5	41.1	33.2	49.4
63 A...	Canton	23.8	20.2	33.3	51.2	61.1	72.2	70.0	72.1	67.6	46.5	41.1	33.2	49.4
29 B...	Camp Dennison	25.5	21.0	39.9	54.4	63.1	73.5	76.1	78.1	73.3	50.1	43.0	36.5	53.0
35 A...	Cambridge	23.3	19.6	35.0	51.2	59.5	71.7	69.5	72.0	67.6	45.2	39.8	29.4	48.7
43 A...	Cardington	23.3	17.1	35.0	49.2	59.0	69.0	70.9	70.0	66.4	45.0	41.0	31.7	...
33 A...	Carrollton	22.5	18.8	33.2	51.2	61.4	72.5	67.8	70.0	66.4	46.3	41.6	32.4	...
21 A...	Cedarville	22.5	18.8	33.2	51.2	61.4	72.5	67.8	70.0	66.4	46.3	41.6	32.4	...
55 A...	Celina	27.5	22.9	37.8	55.1	63.3	73.8	73.7	75.1	71.3	48.8	42.4	36.8	52.4
18 B...	Cherry Fork	25.6	22.9	40.1	54.4	62.4	73.6	73.4	75.6	71.7	48.1	42.4	36.0	...
29 A...	Cincinnati	26.6	23.8	40.8	55.3	64.0	75.9	75.1	75.6	71.7	48.1	42.4	36.0	...
14 A...	Circleville	26.0	22.0	39.5	55.0	62.9	74.9	74.4	76.2	72.8	51.0	44.1	37.2	53.6
22 A...	Clarksville	24.6	20.4	39.0	53.6	61.2	73.6	72.6	74.4	72.4	48.8	43.0	36.6	51.4
65 A...	Cleveland (W. B.)	22.3	19.9	33.3	48.3	59.5	69.8	69.0	70.7	67.5	46.1	41.4	33.3	48.5
65 B...	Cleveland (Hyde)	24.0	19.6	32.5	49.1	59.8	69.3	69.0	70.4	67.2	46.9	41.8	34.1	48.7
42 B...	Clifton	22.8	18.4	36.3	52.4	61.5	74.0	73.6	76.1	71.1	47.6	41.8	34.1	...
9 A...	Coalton	26.2	21.5	40.0	53.0	60.4	73.5	72.6	75.5	70.3	46.5	42.8	35.2	51.5
59 B...	Colebrook	28.7	24.6	46.8	56.7	67.7	76.7	76.6	76.9	74.6	48.1	41.8	35.2	46.0
16 B...	Cynthiana	18.7	13.6	28.2	46.8	57.7	68.2	67.6	69.8	64.6	44.5	40.1	32.4	...
41 A...	Columbus	27.2	22.9	39.3	52.4	61.5	72.7	73.4	75.5	71.2	48.1	42.4	34.9	51.6
26 A...	Dayton	24.2	21.0	36.7	53.3	62.8	74.9	73.8	76.5	72.2	46.8	42.6	37.0	...
88 A...	Defiance	20.0	17.2	33.2	50.9	62.6	73.4	72.5	74.2	69.4	46.0	36.6	31.4	49.0

TABLE SHOWING MONTHLY AND ANNUAL MEAN TEMPERATURE — CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean.
30 A...	Demos	23.9	14.2	34.0	52.5	60.9	73.7	71.2	74.1	70.5	48.1	48.6	34.8	50.2
85 B...	Dupont	19.8	17.1	31.8	50.6	58.9	70.6	73.6	74.1	67.1	44.8	39.1	30.8	48.2
57 C...	Ellsworth	21.7	18.5	31.8	50.0	59.7	70.9	68.6	74.1	66.5	45.5	40.6	32.4	48.0
66 B...	Elvira	21.7	19.4	38.8	46.0	62.5	73.3	72.8	74.0	69.4	48.8	41.4	32.6	51.2
23 B...	Fayetteville	24.9	19.4	38.8	53.2	61.9	73.0	72.4	74.0	70.9	48.7	42.0	35.4	51.2
74 A...	Findlay	21.5	19.4	34.1	51.5	61.4	72.2	71.6	71.7	67.8	44.9	39.6	32.2	51.2
75 A...	Postoria	22.8	16.9	31.3	50.5	61.4	72.8	72.4	73.6	70.4	44.9	39.1	31.6	51.7
15 A...	Frankfort	26.2	22.4	38.3	53.8	62.1	72.8	72.4	73.6	70.4	44.9	42.4	37.3	51.7
62 B...	Garrettsville	19.9	16.9	31.3	47.9	57.8	67.8	66.1	69.6	64.4	43.5	39.4	32.0	46.4
23 A...	Georgetown	27.9	22.7	41.7	56.3	62.0	71.5	70.3	70.6	66.8	44.7	39.9	34.8	49.1
40 A...	Granville	21.0	20.0	35.9	51.8	62.0	71.5	70.3	70.6	66.8	44.7	39.9	34.8	49.1
40 C...	Gratiot	24.5	20.0	38.7	52.2	60.7	74.0	70.5	72.7	67.7	47.7	42.3	24.2	50.3
19 B...	Greenfield	20.7	17.8	38.1	53.9	61.8	74.4	73.9	75.2	72.3	48.7	42.2	37.4	50.3
56 A...	Green Hill	20.7	17.8	32.1	49.1	59.3	70.7	67.8	70.1	65.8	44.5	39.9	31.4	47.4
54 A...	Greenville	22.9	18.5	38.0	52.1	60.7	71.4	71.5	72.6	68.5	45.7	39.9	33.4	49.4
5 B...	Guyville	26.7	1	37.7	58.6	61.9	72.8	73.5	73.6	69.1	49.9	44.8	34.7	52.5
4 B...	Hackney	25.5	1	37.7	58.6	61.9	72.8	73.5	73.6	69.1	49.9	44.8	34.7	52.5
8 A...	Hangin Rock	20.1	22.5	37.7	53.7	61.3	73.5	72.6	74.4	71.4	48.2	44.4	37.0	52.5
59 A...	Harbor	22.9	17.0	29.5	48.8	58.9	68.0	68.6	69.8	66.8	47.9	41.9	34.2	47.9
86 A...	Hedges	21.1	17.1	33.3	50.3	59.9	70.3	70.5	74.5	67.4	44.0	37.4	29.9	48.0
65 A...	Hebardsville	28.3	24.2	40.7	56.2	63.7	75.0	74.8	77.4	73.4	52.7	46.2	38.0	54.2
60 A...	Hillhouse	20.7	15.9	29.3	47.4	58.9	68.4	66.9	69.6	65.2	44.5	39.9	32.1	46.6
19 A...	Hillsboro	25.3	21.1	39.2	53.3	61.1	72.9	72.5	74.9	71.7	48.8	42.6	36.1	51.6
62 A...	Hiram	20.4	16.5	29.5	49.4	59.0	70.0	68.7	70.4	65.3	44.4	38.7	31.3	47.0
64 B...	Hudson	20.4	16.5	29.5	49.4	59.0	70.0	68.7	70.4	65.3	44.4	38.7	31.3	47.0
28 A...	Jacksonboro	24.8	22.3	37.3	54.2	62.8	74.7	74.5	76.0	72.4	50.7	41.8	33.9	52.3
50 A...	Kenton	23.7	20.6	37.0	53.1	61.8	74.7	73.5	75.1	72.4	50.7	41.8	33.9	52.3
42 A...	Kilbourne	23.0	18.1	34.8	51.3	59.0	72.2	73.0	76.0	70.8	47.3	40.8	33.6	50.8
38 A...	Killbuck	22.5	20.0	34.5	51.2	62.5	74.2	72.5	76.3	70.8	47.3	40.8	33.6	50.8
33 B...	Lancaster	22.0	15.1	32.7	50.6	60.5	71.5	71.8	71.1	66.8	45.5	40.8	32.5	50.0
45 A...	Leipsic	22.0	15.1	32.7	50.6	60.5	71.5	71.8	71.1	66.8	45.5	40.8	32.5	50.0
89 B...	Levering	17.6	15.1	31.3	48.6	57.9	68.5	67.4	68.8	64.0	39.7	36.9	31.4	45.6
11 A...	Logan	26.2	22.5	39.5	54.8	63.2	74.9	72.0	74.7	71.6	47.6	43.0	33.2	52.1
2 B...	Lorain	23.5	18.4	34.5	51.6	62.3	75.0	72.0	74.7	71.6	47.6	43.0	33.2	52.1
58 A...	Lordstown	21.0	17.3	30.9	47.5	54.5	68.2	66.8	69.0	64.8	44.6	38.8	32.4	46.6
2 A...	Marietta	23.0	23.8	39.8	54.7	62.6	73.9	72.0	75.0	69.8	49.0	43.9	37.8	52.2
44 A...	Marion	22.4	19.5	34.7	51.2	61.9	72.2	71.3	72.9	69.8	46.5	41.4	33.9	49.8
10 A...	McArthur	26.7	20.9	37.9	52.7	61.4	72.4	72.0	74.1	70.0	47.9	42.1	33.2	51.1
4 A...	McArthur	26.7	20.9	37.9	52.7	61.4	72.4	72.0	74.1	70.0	47.9	42.1	33.2	51.1
67 A...	McConnellsville	20.5	17.6	32.3	51.3	62.0	70.7	71.9	74.7	71.6	47.9	42.1	34.6	48.9
67 A...	Medina	20.5	17.6	32.3	51.3	62.0	70.7	71.9	74.7	71.6	47.9	42.1	34.6	48.9

TABLE SHOWING MONTHLY AND ANNUAL MEAN TEMPERATURE — CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean.
39 A...	Milfordton...	20.1	18.0	33.4	49.1	59.9	71.5	70.2	72.5	67.2	45.1	39.6	32.0	48.2
12 A...	Milligan...	25.4	20.9	37.9	52.4	61.5	73.2	71.2	76.2	69.9	46.6	42.4	34.6	50.8
56 B...	Millport...	17.9	16.2	36.6	54.8	65.2	70.8	70.1	76.2	71.2	43.6	44.0	34.1	46.8
82 A...	Montpelier...	20.4	17.6	32.0	49.8	60.1	73.0	71.9	72.4	66.3	44.1	37.2	30.5	46.8
84 A...	Napoleon...	24.1	19.6	34.9	61.7	62.3	74.1	71.0	73.1	69.0	48.8	43.4	34.1	50.5
31 B...	New Alexandria...	21.2	18.2	32.7	50.2	61.9	73.2	71.5	72.2	66.9	45.0	40.5	31.2	48.6
63 B...	New Berlin...	21.2	18.7	35.4	52.2	60.6	73.0	71.8	74.3	69.3	46.3	40.5	34.6	49.9
51 A...	New Bremen...	21.8	19.1	34.6	51.7	60.5	72.1	69.9	72.2	67.5	45.1	41.0	33.2	49.1
54 A...	New Comertown...	23.6	20.4	33.2	53.2	62.2	73.1	70.7	74.5	70.0	47.3	41.0	35.5	51.6
14 C...	New Holland...	21.4	17.5	35.6	54.6	61.1	77.8	76.7	77.9	71.7	50.7	43.2	33.1	51.6
27 A...	New Paris...	21.4	17.5	35.6	54.6	61.1	77.8	76.7	77.9	71.7	50.7	43.2	33.1	51.6
56 C...	New Waterford...	21.4	17.5	35.6	54.6	61.1	77.8	76.7	77.9	71.7	50.7	43.2	33.1	51.6
48 A...	North Lewisburg...	21.1	19.8	34.4	52.0	60.2	71.4	72.2	73.3	66.8	44.2	39.4	33.2	49.3
65 C...	North Royaltown...	21.5	17.6	30.7	49.8	60.7	73.7	70.1	71.5	66.1	45.3	40.6	32.2	48.4
71 A...	Norwalk...	21.5	17.6	30.7	49.8	60.7	73.7	70.1	71.5	66.1	45.3	40.6	32.2	48.4
49 B...	Northwood...	21.5	17.6	30.7	49.8	60.7	73.7	70.1	71.5	66.1	45.3	40.6	32.2	48.4
66 A...	Oberlin...	21.7	18.0	35.3	52.0	60.4	70.8	70.2	72.5	67.9	45.1	38.8	32.5	48.4
41 B...	O. S. University...	21.7	18.0	35.3	52.0	60.4	70.8	70.2	72.5	67.9	45.1	38.8	32.5	48.4
58 B...	Orangeville...	21.2	19.5	36.6	51.6	61.0	73.0	72.5	73.8	69.9	46.6	41.0	34.8	50.3
85 B...	Ottawa...	21.4	17.4	31.3	49.0	59.0	69.6	67.5	69.3	66.0	43.3	39.1	32.1	48.9
40 B...	Pataskala...	21.4	18.6	35.4	51.1	60.8	72.9	72.7	74.0	66.1	45.5	41.0	33.8	49.9
34 C...	Peoli...	21.8	19.3	35.7	51.8	60.5	73.5	71.5	73.9	69.1	46.2	42.0	34.4	50.2
36 B...	Philo...	21.8	18.0	33.9	51.8	61.5	75.6	74.1	75.1	70.4	48.8	42.9	34.4	50.2
47 A...	Plattsburg...	21.5	18.5	35.8	53.4	61.2	73.5	72.1	73.4	70.6	47.8	41.5	35.2	50.2
6 A...	Pomeroy...	20.9	18.7	33.6	53.6	61.2	73.5	72.1	73.4	70.6	47.8	41.5	35.2	50.2
17 A...	Portsmouth...	21.5	18.7	35.4	51.7	64.9	75.9	71.8	76.3	72.0	50.4	37.4	30.0	54.9
84 B...	Ridgeville Corners...	21.6	17.6	32.9	50.9	60.0	70.7	70.9	72.5	68.0	45.5	44.3	37.0	48.0
24 B...	Ripley...	27.2	21.7	40.5	54.4	62.2	74.9	73.3	75.7	71.4	49.8	44.3	37.0	52.7
45 A...	Richwood...	20.6	17.7	32.3	46.8	57.3	69.1	67.8	70.4	63.6	48.4	38.2	31.6	46.1
68 C...	Rittman...	20.6	17.7	32.3	46.8	57.3	69.1	67.8	70.4	63.6	48.4	38.2	31.6	46.1
73 A...	Rocky Ridge...	20.0	20.7	37.2	49.8	62.2	72.4	73.2	73.2	68.3	47.1	40.0	35.6	49.8
48 B...	Rosewood...	23.2	18.9	31.0	51.5	59.8	71.2	71.7	72.6	68.4	46.5	39.9	33.4	48.8
72 A...	Sandusky...	23.0	19.8	31.1	48.8	60.5	71.5	72.9	72.9	68.4	47.3	40.8	33.0	49.0
67 B...	Sharon Center...	20.9	19.9	35.0	49.2	59.4	76.5	75.9	78.5	70.4	50.3	42.8	32.4	47.7
70 C...	Shenandoah...	20.9	17.9	31.5	49.2	59.4	76.5	75.9	78.5	70.4	50.3	42.8	32.4	47.7
52 A...	Sinking Spring...	21.1	19.2	37.2	53.5	61.9	72.4	71.9	74.2	71.6	47.9	43.0	36.2	49.9
19 C...	Stinking Spring...	21.1	19.2	37.2	53.5	61.9	72.4	71.9	74.2	71.6	47.9	43.0	36.2	49.9
71 B...	Stenben...	21.1	19.8	33.4	49.4	58.8	71.8	70.8	72.1	66.1	44.3	35.8	29.9	46.9
80 A...	Sylvania...	21.5	16.4	30.0	48.4	58.8	71.8	70.8	72.1	66.1	44.3	35.8	29.9	46.9
7 A...	Thurman...	23.6	21.5	38.7	54.9	63.1	74.9	75.2	76.9	72.2	47.3	42.7	37.8	52.9

TABLE SHOWING MONTHLY AND ANNUAL MEAN TEMPERATURE—CONCLUDED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean.
75 B.	Tiffin.....	22.5	20.0	33.1	50.6	61.4	72.4	71.9	73.0	69.2	46.5	40.9	33.0	49.5
80 A.	Toledo.....	19.7	19.0	30.7	49.3	60.8	71.5	71.2	72.5	68.1	46.1	39.0	30.6	48.2
77 A.	Upper Sandusky..	22.3	19.1	33.9	52.0	61.4	72.0	71.0	72.5	68.4	45.7	40.8	30.6	48.2
88 A.	Van Wert.....	20.4	18.8	33.1	51.1	60.9	72.0	72.6	73.2	69.1	45.5	38.7	31.2	48.9
18 A.	Vancuburg.....	29.2	23.9	41.4	54.9	62.6	73.9	73.1	76.4	71.4	49.8	46.1	38.4	53.4
72 B.	Vermillion.....	21.3	18.3	30.7	48.6	60.0	70.1	69.8	71.3	67.6	45.7	39.8	32.2	48.0
71 A.	Vickery.....	21.6	19.1	31.3	49.3	59.5	70.3	69.3	72.5	68.6	46.0	39.7	32.6	48.3
55 B.	Warren.....	22.0	18.7	32.7	49.9	60.5	70.3	68.5	70.0	65.3	44.6	40.0	33.6	48.0
37 A.	Warsaw.....	23.1	18.7	34.9	50.7	60.0	73.2	69.1	73.1	67.7	43.9	38.3	31.0	48.2
15 A.	Wauseon.....	18.8	18.5	31.0	50.4	60.6	72.6	72.2	73.1	68.8	45.6	37.8	29.0	48.2
16 A.	Waverly.....	27.4	23.3	41.4	55.7	63.8	75.3	75.1	76.9	73.2	49.5	43.2	36.4	53.4
66 C.	Wellington.....	22.3	20.3	33.5	50.0	60.1	69.4	69.3	73.2	68.2	48.9	42.6	35.2	49.4
11 C.	Westerville.....	24.7	20.7	36.6	52.0	60.6	72.1	71.2	72.9	67.9	45.9	42.0	35.7	50.2
79 A.	Wooster.....	21.8	17.9	32.4	49.5	59.4	69.9	68.6	70.9	66.5	44.2	40.4	32.8	47.9
7 A.	Youngtown.....	22.0	18.5	33.6	49.8	60.6	72.1	68.8	69.9	66.0	44.8	39.9	32.3	48.2
	State mean.....	23.4	19.6	35.5	51.7	61.1	72.0	71.6	73.5	69.0	46.9	41.3	33.9	50.0
	Highest.....	31.5	24.2	44.1	56.3	64.9	76.5	76.7	78.1	73.4	52.7	46.4	39.9	54.9
	Lowest.....	17.6	13.5	27.2	44.8	57.3	66.6	64.7	66.8	63.1	43.4	35.8	28.1	45.3
	Range.....	13.9	10.7	16.9	11.5	7.6	9.9	12.0	11.3	10.3	9.3	10.6	11.8	9.6

NOTE.—A small letter in the column shows number of days missing; as, a=1, b=2, etc.; x not used.

TABLE SHOWING THE MONTHLY MAXIMUM AND MINIMUM TEMPERATURES FOR EACH STATION, FOR YEAR BEGINNING JANUARY 1, 1895, AND ENDING DECEMBER 31, 1895.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
64 A...	Akron.....	53	58	59	80	94	95	94	93	91	69	72	62
31 B...	Annapolis.....	-6	-6	68	23	31	101	46	40	38	21	16	8
69 A...	Ashland.....	-54	-6	10	21	98	35	100	96	34	19	73	65
5 A...	Ashland.....	-51	-59	58	81	24	43	92	41	34	07	17	8
5 A...	Ashland.....	-12	-8	9	29	39	39	45	43	34	19	71	61
61 A...	Athens.....	-38	66	81	84	94	98	99	96	96	76	13	6
61 A...	Auburn.....	-10	-11	12	26	30	43	46	46	35	16	...	...
70 A...	Auburn.....	-51	57	60	80	91	96	95	96	31	70	71	60
70 A...	Bangorville.....	-11	-21	1	19	20	30	34	34	30	17	8	1
49 A...	Bangorville.....	...	60	67	81	93	96	94	95	90	70	73	60
49 A...	Bellevue.....	...	...	9	21	31	43	47	48	38	21	17	4
28 B...	Bellevue.....	54	62	74	82	94	97	98	96	95	74	76	62
28 B...	Bethany.....	-8	-12	14	24	32	44	44	41	30	18	8	6
78 A...	Bethany.....	59	65	80	83	95	99	99	100	96	76	78	62
78 A...	Benton Ridge.....	-11	-13	17	26	30	44	49	41	30	11	16	11
65 D...	Benton Ridge.....	...	66	73	89	98	103	101	99	99	79	75	62
65 D...	Benton Ridge.....	...	-11	1	22	27	41	43	45	41	12	14	5
61 B...	Binola.....	54	58	62	82	94	98	101	94	93	67	73	57
61 B...	Binola.....	-6	-9	7	30	35	51	47	54	41	19	17	zero
72 C...	Bissell.....	59	55	59	79	92	94	96	91	91	69	74	56
72 C...	Bissell.....	-8	-15	5	21	26	37	37	45	35	22	14	4
68 B...	Berlin Heights.....	...	...	...	83	a	...	98	...	...	...	...	...
68 B...	Berlin Heights.....	...	...	...	23	27	...	52	...	...	...	...	...
39 C...	Big Prairie.....	54	62	62	86	96	98	96	96	96	70	74	61
39 C...	Big Prairie.....	-7	-8	10	22	26	36	41	47	35	18	14	1
20 A...	Bladensburg.....	55	62	70	...	94	99	97	96	93	...	75	...
20 A...	Bladensburg.....	-10	-7	7	...	25	35	40	40	33	...	16	...
79 A...	Bloomington.....	-11	57	81	85	93	98	97	96	96	76	82	65
79 A...	Bloomington.....	-12	63	17	24	30	40	47	48	35	18	15	10
76 A...	Bowling Green.....	-11	52	65	84	97	99	100	96	97	73	74	62
76 A...	Bowling Green.....	-7	63	66	81	29	37	37	40	30	13	11	2
34 B...	Bucyrus.....	54	52	60	82	96	96	94	99	94	72	76	62
34 B...	Bucyrus.....	-8	52	60	82	32	40	50	50	34	12	12	4
63 A...	Canal Dover.....	55	61	63	83	97	99	95	...	...	72	75	63
63 A...	Canal Dover.....	-7	6	6	12	26	39	44	...	...	12	18	10
29 B...	Canton.....	58	67	59	82	94	98	93	93	93	71	73	62
29 B...	Canton.....	-5	-5	11	24	30	39	46	46	36	22	17	1
29 B...	Camp Dennison.....	59	65	84	84	95	99	101	103	100	78	79	64
29 B...	Camp Dennison.....	-9	-12	18	28	31	49	53	50	38	17	20	11

TABLE SHOWING THE MONTHLY MAXIMUM AND MINIMUM TEMPERATURES FOR EACH STATION, ETC.—CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
35 A...	Cambridge	56	59	69	78	95	99	93	95	79	75	74	60
43 A...	Cardington	44	55	74	82	95	97	96	90	75	71	71	61
38 A...	Carrollton	53	62	74	82	95	98	90	40	31	27	22	12
21 A...	Cedarville	— 8	10	10	20	25	35	100	...	40	16	17	59
55 A...	Celina	60	66	79	87	94	98	94	98	79	76	74	— 6
18 B...	Cherry Fork	59	67	82	92	98	101	100	100	88	80	73	64
29 A...	Cincinnati	60	67	84	92	98	97	95	93	73	70	68	65
14 A...	Circleville	59	65	80	91	97	101	100	100	84	79	73	64
22 A...	Clarksville	59	65	80	91	97	101	100	100	84	79	73	64
65 A...	Cleveland (Weather Bureau)	56	62	78	85	94	98	93	91	72	68	62	50
65 B...	Cleveland (Hyde)	56	62	78	85	94	98	93	91	72	68	62	50
21 B...	Clifton	56	62	78	85	94	98	93	91	72	68	62	50
9 A...	Coalton	56	62	78	85	94	98	93	91	72	68	62	50
59 B...	Colebrook	46	58	73	82	92	91	93	92	86	80	73	60
16 B...	Cynthiana	60	66	81	90	95	96	93	92	86	80	73	60
41 A...	Columbus	56	62	78	85	94	98	93	91	72	68	62	50
36 A...	Dayton	56	62	78	85	94	98	93	91	72	68	62	50
83 A...	Defiance	56	62	78	85	94	98	93	91	72	68	62	50
30 A...	Demos	53	60	76	84	93	97	96	93	84	76	73	67
85 C...	Dupont	54	63	76	84	93	97	96	93	84	76	73	67
57 B...	Ellsworth	53	60	76	84	93	97	96	93	84	76	73	67

TABLE SHOWING THE MONTHLY MAXIMUM AND MINIMUM TEMPERATURES FOR EACH STATION, ETC.—CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
66 B.	Elyria	55	...	64	58	99	100	101	99	100	79	75	79
23 B.	Payetteville	-5	63	...	20	29	41	46	45	37	23	77	18
78 A.	Findlay	-12	-14	18	27	93	45	95	95	30	19	16	10
75 A.	Postoria	-9	54	22	26	97	43	96	95	32	15	74	62
15 A.	Frankfort	-8	...	62	25	95	46	98	...	...	72	73	zero
62 B.	Garrettsville	-9	65	80	25	95	46	98	94	96	75	77	6
23 A.	Georgetown	-11	37	19	29	21	41	45	45	92	16	16	12
40 A.	Granville	-10	21	7	19	93	94	94	94	92	75	72	61
40 C.	Gratiot	-10	a 02	86	19	24	34	38	35	34	20	16	-3
19 B.	Greenfield	-11	b	18	26	...	...	...	...	...	...	...	...
56 A.	Green Hill	-11	64	15	24	95	99	99	99	95	73	77	a 02
54 A.	Greenville	-12	63	13	24	27	37	40	41	30	15	15	zero
5 B.	Guysville	-12	63	13	24	94	98	96	94	93	74	78	61
4 B.	Hackney	-9	8	15	25	28	41	48	45	36	17	16	3
8 A.	Hanging Rock	-13	63	15	25	95	98	96	95	95	73	73	a 63
59 A.	Harbor	-5	63	20	29	98	104	98	96	95	24	c 21	a 12
86 A.	Hedges	-12	63	19	29	98	95	98	98	90	78	75	61
65 A.	Hebbardsville	-12	63	19	29	98	95	98	98	90	69	71	-9
60 A.	Hillhouse	-9	63	19	29	98	95	98	98	90	69	71	60
19 A.	Hillsboro	-15	63	19	29	98	95	98	98	90	69	71	9
62 A.	Hiram	-10	63	19	29	98	95	98	98	90	69	71	6

TABLE SHOWING THE MONTHLY MAXIMUM AND MINIMUM TEMPERATURES FOR EACH STATION, ETC.—CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
64 B...	Hudson .....	...	...	...	...	...	...	96	96	93	72	76	...
28 A...	Jacksonboro	58	67	80	87	97	101	98	101	101	-20	15	63
50 A...	Kenton	-12	-15	16	27	33	48	50	51	34	21	80	11
42 A...	Kilbourne	-10	-11	9	25	30	98	100	100	99	78	79	62
38 A...	Killbuck	54	62	73	80	92	95	94	47	31	16	15	7
13 B...	Killbuck	-9	52	68	28	29	40	45	...	...	...	...	...
85 A...	Lancaster	-9	-10	11	24	26	36	41	100	92	71	a 71	60
39 B...	Leipsic .....	...	...	...	...	...	...	...	100	94	17	a 16	4
11 A...	Levering	56	...	72	82	96	100	100	97	96	77	16	61
2 B...	Logan	-6	...	8	20	25	41	42	42	30	11	75	62
58 A...	Lowell	53	69	70	88	98	99	96	99	95	71	13	1
2 A...	Lordstown	-16	-20	3	18	30	30	35	35	28	7	12	50
44 A...	Marietta	58	67	80	90	100	104	101	100	99	78	78	66
10 A...	Marion	-10	-8	13	26	29	45	44	43	34	11	10	8
4 A...	McArthur	a 58	56	...	86	98	103	...	...	...	...	...	...
67 A...	McConnellsville	a 7	-5	...	22	28	45	...	95	92	72	71	61
39 A...	Medina	65	58	61	81	93	96	95	38	31	22	17	3
12 A...	Milfordton	c 57	-14	11	19	24	35	38	34	33	25	22	c 96
56 B...	Milligan	e 4	63	73	87	93	96	98	97	93	19	22	c 11
82 A...	Montpelier	54	65	73	86	97	99	97	98	89	79	77	61
84 A...	Napoleon	-9	-10	10	23	28	39	44	44	32	15	17	4
		-12	-12	11	24	30	41	45	43	34	15	14	4
		60	66	75	82	95	98	98	97	98	76	78	67
		-8	60	61	81	96	98	95	95	94	16	15	6
		55	60	61	81	96	98	95	95	94	16	15	6
		-7	-14	7	21	25	35	40	43	35	16	15	4
		51	51	78	80	96	100	102	101	95	75	76	60
		-11	-11	12	19	25	32	43	44	32	17	14	2
		58	65	76	87	102	106	103	100	99	78	79	65
		-10	-14	13	20	27	37	40	38	35	12	8	5
		...	...	60	82	94	...	...	92	92	74	73	62
		...	...	9	27	36	...	48	...	40	26	19	...
		48	60	67	83	95	97	96	95	94	70	71	56
		-8	-16	3	25	31	42	44	44	32	13	12	-10
		52	61	66	84	98	102	98	97	97	74	72	a 60
		-7	-11	1	25	32	45	46	45	38	14	14	a -2

TABLE SHOWING THE MONTHLY MAXIMUM AND MINIMUM TEMPERATURES FOR EACH STATION, ETC.—CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
31 A...	New Alexandria	53	59	65	81	92	100	95	93	91	a 73	73	63
63 B...	New Berlin	-9	-8	59	23	95	43	47	49	30	a 21	19	4
51 A...	New Bremen	55	58	60	82	95	99	94	96	94	75	73	60
34 A...	New Comerstown	-12	-15	78	22	96	30	42	43	35	18	73	zero
14 C...	New Holland	55	60	66	85	96	101	96	98	95	78	74	60
27 A...	New Paris	59	64	80	83	96	100	99	96	93	11	71	9
56 C...	New Waterford	-14	-10	16	24	95	41	44	45	35	16	73	64
48 A...	North Lewisburg	56	57	62	78	93	101	98	102	98	73	75	10
65 C...	North Royalton	62	65	73	86	95	102	98	102	98	84	77	60
71 A...	Norwalk	-14	-13	77	86	96	100	98	102	98	84	77	60
49 B...	Northwood	56	61	63	85	96	100	98	100	96	71	76	10
66 A...	Oberlin	-9	-15	4	17	19	29	34	35	30	12	5	-4
41 B...	Ohio State University	-12	-12	10	22	27	35	44	45	35	70	73	65
58 C...	Orangeville	54	61	65	87	95	95	99	98	95	70	77	62
85 B...	Ottawa	-7	-14	4	20	27	38	44	45	36	20	10	-1
40 B...	Pataaskala	56	64	79	82	96	99	97	98	95	74	77	62
34 C...	Peoli	-9	-10	15	23	29	45	45	45	35	12	15	11
36 B...	Philo .....	...	...	59	81	93	93	96	92	...	69	70	69
47 A...	Plattsburg	52	63	75	82	96	100	96	95	94	71	74	63
6 A...	Pomeroy	-8	-10	3	25	29	43	43	43	35	13	12	4
17 A...	Portsmouth	55	62	76	83	97	102	100	99	96	77	78	61
		-10	-10	14	23	26	36	36	44	34	16	14	zero
		54	50	65	86	97	100	100	95	94	a 74	74	...
		-1	-6	9	28	29	41	45	48	35	a 18	18	...
		...	...	...	...	...	100	98	96	95	74	75	68
		...	...	...	...	...	42	51	51	36	22	78	9
		...	...	...	...	...	96	94	97	95	33	78	60
		...	...	...	...	...	31	41	46	33	18	14	10
		...	...	...	...	...	102	100	97	93	81	...	66
		...	...	...	...	...	44	48	48	34	17	...	10
		...	...	...	...	...	102	100	97	96	78	84	70
		...	...	...	...	...	47	48	50	38	18	23	14

TABLE SHOWING THE MONTHLY MAXIMUM AND MINIMUM TEMPERATURES FOR EACH STATION, ETC. CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
81 B...	Ridgeville Corners...	32	61	67	85	94	95	97	96	95	71	74	59
21 B...	Ripley	-9	-11	-	35	30	42	43	14	31	13	13	7
45 A...	Richwood	-11	-13	16	28	92	97	95	46	35	22	19	65
68 C...	Rittman .....	...	...	...	...	95	...	...	98	98	67	19	...
73 A...	Rocky Ridge	54	58	39	80	94	96	93	95	90	69	73	61
48 B...	Rosewood	-8	-12	4	19	22	34	39	41	33	16	12	4
72 A...	Sandusky	53	62	64	85	98	99	102	98	96	72	75	68
67 B...	Sharon Center	-5	-10	6	22	22	44	47	47	47	19	8	3
70 C...	Shenandoah	55	62	c 75	80	93	96	97	95	93	71	75	83
52 A...	Sidney	-9	-12	c 11	24	30	42	45	45	45	14	12	10
29 C...	Sinking Spring	57	64	62	82	92	93	98	93	95	70	75	62
71 B...	Steuben	-5	-6	7	28	35	46	52	52	41	25	14	8
80 B...	Sylvania .....	...	58	60	...	93	97	98	98	94	30	18	61
7 A...	Thurman	54	61	63	83	96	97	97	96	90	72	76	60
75 B...	Tiffin	-9	-14	4	22	27	37	42	45	33	15	8	1
80 A...	Toledo .....	...	64	75	87	95	100	98	100	99	74	74	62
77 A...	Upper Sandusky .....	...	-12	13	25	30	45	40	46	95	76	a 12	9
88 A...	Van Wert	56	...	...	...	...	...	...	...	35	...	...	c 11
18 A...	Vanceburg .....	...	58	65	...	...	...	...	...	...	...	...	...
72 B...	Vermillion .....	...	...	...	...	...	...	...	...	...	...	...	...
74 A...	Vickery .....	...	...	...	...	...	...	...	...	...	...	...	...

TABLE SHOWING THE MONTHLY MAXIMUM AND MINIMUM TEMPERATURES FOR EACH STATION, ETC.—CONCLUDED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
58 B...	Warren	53	56	61	82	97	101	97	95	92	70	72	64
37 A...	Warsaw.	—7	—16	7	21	24	36	40	34	33	21	18	8
81 A...	Wauson.....	—9	...	8	20	24	39	40	...	96	b 76	p 76	c 76
16 A...	Waverly.....	—11	—16	67	22	29	42	45	99	97	b 11	73	c 13
66 C...	Wellington	—12	—8	85	26	29	43	46	100	100	79	80	—5
41 C...	Westerville.....	—9	—8	18	26	29	36	36	100	100	79	80	67
68 A...	Wooster.....	—6	—8	63	20	25	35	40	95	95	72	73	8
57 A...	Youngstown.....	—6	—6	73	26	32	40	46	95	91	b 72	73	62
		—51	—51	59	21	27	35	42	94	83	b 15	16	4
		—10	—10	60	21	27	38	42	92	84	73	72	61
		—4	—4	10	24	29	40	46	96	92	70	70	—2
									40	34	24	19	8
	Highest.....	62	70	86	90	102	105	106	103	105	84	85	79
	Lowest.....	—1	—4	22	31	36	51	55	56	42	30	24	14
		—45	—49	57	77	88	90	92	91	88	65	70	56
		—19	—24	—7	16	19	29	34	31	25	8	5	—13

NOTE.—Upper figures maximum, lower figures minimum.

TABLE SHOWING MONTHLY AND ANNUAL PRECIPITATION, ETC.—CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for Year.
59 A	Coalton	4.01	0.90	1.70	1.53	1.58	3.11	1.75	1.86	1.69	1.12	1.47	2.84	23.40
59 B	Colebrook	3.54	1.08	1.50	1.53	3.78	2.04	3.25	3.90	4.25	1.54	4.13	4.43	35.33
16 B	Cynthiana	7.38	0.50	1.37	3.58	2.79	2.53	2.24	2.10	1.45	0.98	5.39	...	...
41 A	Columbus	4.67	0.64	1.28	4.12	1.73	3.40	1.48	3.05	0.66	0.98	4.14	...	...
26 H	Dayton	4.87	0.48	1.73	1.71	2.11	3.80	0.65	2.12	0.66	0.98	5.39	...	...
83 A	Defiance	1.87	0.76	0.70	1.05	1.81	1.28	1.30	2.02	1.35	1.73	3.10	...	...
30 A	Dumont	4.58	1.34	1.24	1.53	4.40	0.50	1.65	3.01	1.00	1.73	3.10	...	...
85 C	Dupont	3.98	0.66	0.65	1.97	1.67	1.50	1.53	2.69	1.83	0.89	3.23	...	...
57 B	Elsworth	8.92	0.92	1.52	1.53	1.67	3.13	1.45	5.52	2.68	2.24	4.56	...	...
66 B	Elvira	1.64	...	...	1.28	4.28	2.21	1.45	5.52	2.68	2.24	4.56	...	...
23 B	Fayetteville	6.54	0.58	2.13	3.51	1.98	3.67	2.01	1.83	0.63	1.09	4.00	...	...
73 A	Findlay	3.23	0.50	0.82	2.71	2.54	2.76	3.04	2.23	1.83	1.04	5.67	...	...
75 A	Forstada	5.17	...	...	3.24	2.04	1.63	1.82	3.36	0.61	1.50	2.98	...	...
62 B	Frankfort	3.70	1.08	1.69	3.08	2.64	2.14	2.58	2.87	4.83	1.52	4.74	...	...
27 A	Garrettsville	4.07	0.35	1.40	3.78	2.36	...	2.50	...	...	...	...	...	...
20 A	Georgetown	4.73	0.40	3.28	2.00	1.99	1.99	2.15	3.43	2.04	1.26	5.44	...	...
40 C	Gratoot	4.07	0.51	1.48	2.93	1.32	2.70	3.34	4.02	1.87	1.38	3.83	...	...
19 B	Greenfield	4.58	0.40	1.07	3.40	1.13	1.71	1.68	1.70	1.38	1.29	3.60	...	...
54 A	Green Hill	4.48	0.50	1.34	1.17	1.38	2.32	3.18	4.02	1.38	1.48	3.27	...	...
54 A	Greenville	2.28	0.48	1.21	1.64	1.08	2.78	0.70	1.53	1.29	0.74	5.14	...	...
4 A	Guyville	4.08	...	...	2.28	1.36	1.28	1.02	3.50	2.30	1.41	1.98	...	...
4 A	Hackney Rock	4.53	0.80	3.65	2.24	2.28	3.88	3.98	3.90	1.80	1.79	3.66	...	...
59 A	Hager	3.44	0.20	1.75	1.67	2.48	2.73	1.82	3.15	5.85	2.97	1.87	...	...
38 A	Hedges	3.24	0.80	1.85	1.98	1.53	1.71	1.34	3.18	1.55	1.09	4.63	...	...
65 A	Hebardsville	3.41	0.64	2.11	1.86	1.49	2.16	1.45	3.60	1.42	1.25	5.76	...	...
60 A	Hillhouse	2.65	0.64	2.02	1.34	1.49	2.77	3.15	3.83	3.46	2.35	5.11	...	...
19 A	Hillsboro	1.70	0.80	1.70	2.28	1.02	2.51	3.45	2.76	3.46	1.90	5.95	...	...
62 A	Hiram	1.60	0.83	1.60	1.81	2.00	1.94	2.23	2.76	4.13	1.41	5.67	...	...
64 A	Hudson .....	...	...	...	1.81	2.00	1.94	2.23	2.76	4.13	1.41	5.67	...	...
28 A	Jacksonboro	5.10	0.80	...	1.55	1.45	5.40	1.80	5.40	2.54	0.91	5.87	...	...
50 A	Kelton	2.86	0.45	1.33	2.07	2.01	2.03	1.40	1.80	0.90	1.16	3.80	...	...
42 A	Kilbourne	2.00	0.86	1.13	3.03	1.98	2.44	1.14	1.22	1.33	0.90	4.31	...	...
38 A	Kilbuck	4.13	0.39	1.09	1.87	1.48	2.15	1.90	4.27	3.20	0.90	4.31	...	...
13 B	Lancaster .....	...	...	...	...	...	...	...	...	...	...	...	...	...
80 A	Leipsic	2.69	0.70	0.61	2.80	1.23	1.85	1.00	2.94	1.08	1.19	4.30	...	...
37 A	Levering	3.87	0.70	1.84	2.81	2.22	4.15	2.90	2.94	1.08	0.80	3.57	...	...
11 A	Logan	3.40	0.73	1.32	0.89	1.39	5.23	2.98	6.25	2.13	1.25	4.39	...	...
2 B	Lowell	1.86	0.43	0.80	1.34	0.31	1.28	1.85	6.25	2.85	1.66	2.71	...	...

TABLE SHOWING MONTHLY AND ANNUAL PRECIPITATION, ETC.—CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for Year.
58 A	Lordstown.....	3.84	0.40	1.91	1.56	1.90	2.69	2.01	2.90	3.22	1.07	3.10	4.51	28.72
70 B	Mansfield.....	3.33	0.67	1.92	2.48	1.68	4.78	1.47	2.62	2.08	1.33	1.98	2.35	26.61
2 A	Marietta.....	5.43	0.87	3.10	1.17	1.64	2.37	2.21	1.90	2.61	0.93	1.96	2.35	21.59
44 A	Marion.....	5.06	0.40	3.03	0.10	1.33	4.06	2.21	1.80	1.76	0.93	3.70	3.74	23.59
10 A	McArthur.....	5.49	0.91	1.89	1.54	2.98	1.69	1.23	3.85	2.22	1.32	1.52	4.05	29.06
4 A	McConnellsville.....	2.92	0.51	1.47	1.75	2.20	1.87	1.30	4.21	1.89	1.35	2.17	4.15	29.35
67 A	Medina.....	4.90	0.51	2.04	2.51	1.45	2.12	1.03	2.68	2.01	0.99	3.73	3.42	29.52
39 A	Millford.....	4.15	0.78	1.46	1.48	1.91	2.12	1.03	3.75	2.68	1.69	2.18	2.90	27.39
12 A	Milligan.....	4.10	0.75	2.05	1.11	1.66	1.55	2.47	5.10	1.86	1.26	3.31	2.90	27.00
56 B	Millport.....	2.79	0.75	0.73	1.61	2.19	1.02	1.38	4.52	1.86	1.47	3.89	4.74	27.66
82 A	Montpelier.....	2.07	0.13	0.59	1.54	2.20	1.08	1.23	1.74	2.25	0.69	3.24	4.42	27.18
84 A	Napoleon.....	6.24	2.22	4.12	2.60	1.43	1.65	3.33	4.06	1.71	0.98	2.41	5.59	36.34
31 A	New Alexandria.....	3.71	0.60	1.66	2.19	1.28	3.40	2.81	5.48	1.90	1.28	3.40	4.04	31.81
63 B	New Berlin.....	2.38	0.37	1.17	1.42	2.65	2.49	2.32	2.20	0.85	0.20	5.77	4.06	25.87
51 A	New Bremen.....	4.18	0.89	1.53	1.18	1.18	2.17	3.54	2.68	2.00	1.38	3.80	4.42	28.67
34 A	Newcomerstown.....	6.83	0.70	1.37	2.83	0.89	1.80	1.69	2.83	1.31	1.11	4.16	2.91	28.46
14 C	New Holland.....	1.37	0.70	1.37	1.39	1.67	1.76	3.29	4.94	2.43	1.55	3.31	4.11	27.90
37 B	New Moscow.....	3.63	0.25	1.97	1.39	1.67	1.76	3.29	4.94	2.43	1.55	3.31	4.11	27.90
27 A	New Paris.....	6.90	0.29	1.20	1.45	3.20	4.25	0.71	1.87	0.89	0.71	5.62	4.12	32.98
56 C	New Waterford.....	4.45	0.65	2.55	1.76	1.44	2.39	3.36	5.00	1.52	1.42	3.50	5.50	32.98
48 A	North Lewisburg.....	3.03	1.42	1.61	1.59	2.10	3.00	0.80	2.00	0.20	1.10	6.15	3.80	28.95
65 C	North Royalton.....	2.85	0.80	1.60	1.59	2.25	4.01	2.24	5.19	1.19	1.17	4.50	3.79	31.99
71 A	Norwalk.....	2.32	0.50	2.00	2.35	1.40	2.36	2.88	4.13	0.37	2.05	4.50	4.05	30.39
49 B	Northwood.....	2.82	0.51	2.00	2.61	1.40	2.36	2.88	4.13	0.37	2.05	4.50	4.05	30.39
66 A	Oberlin.....	2.82	0.51	2.00	2.61	1.40	2.36	2.88	4.13	0.37	2.05	4.50	4.05	30.39
41 B	O. S. University.....	4.38	0.99	1.55	3.40	1.55	1.39	1.25	3.64	1.87	1.95	6.35	2.15	26.86
58 C	Orangeville.....	3.07	0.40	0.60	0.95	1.80	3.55	1.90	1.47	1.49	0.81	4.88	4.29	26.95
86 B	Ottawa.....	4.87	0.42	0.81	1.81	1.51	1.47	1.28	2.88	1.42	0.69	5.54	4.15	26.95
40 B	Pataskala.....	3.07	0.51	1.56	2.77	1.53	1.75	0.90	3.10	1.10	1.36	5.85	4.05	30.07
34 C	Pecoli.....	4.29	0.45	2.02	1.63	2.15	1.45	0.90	3.63	1.57	0.54	3.51	4.68	30.07
36 B	Philo.....	2.85	0.80	1.32	2.38	1.33	1.28	1.99	3.25	1.57	0.54	3.51	4.68	30.07
47 A	Plattsburg.....	4.20	0.70	2.17	2.55	0.88	1.93	1.99	1.31	0.72	0.94	4.75	3.36	23.42
6 A	Pomeroy.....	3.07	0.74	3.42	2.21	0.80	1.92	1.99	2.55	2.35	0.95	4.75	2.88	23.42
17 A	Portsmouth.....	3.19	0.15	0.67	1.10	2.67	0.90	0.86	2.44	1.91	1.25	4.84	2.62	31.24
84 B	Ridgeville Corners.....	4.89	0.61	2.39	3.92	1.82	2.81	0.86	2.54	1.00	1.31	4.84	4.44	24.30
24 B	Ridgely.....	2.99	0.89	1.39	1.84	1.19	3.34	1.63	2.26	0.69	0.97	5.25	3.97	30.47
45 A	Richwood.....	3.65	1.35	2.37	1.80	0.97	2.68	1.63	4.06	3.11	1.31	5.25	3.97	26.41
68 C	Rittman.....	2.11	1.35	0.63	1.99	1.27	2.09	2.00	2.20	1.51	1.58	5.64	4.52	26.89
73 A	Rocky Ridge.....	3.84	0.73	1.24	1.58	1.75	2.35	0.63	2.88	0.27	0.97	5.64	4.52	26.89
48 B	Rosewood.....	3.84	0.73	1.24	1.58	1.75	2.35	0.63	2.88	0.27	0.97	5.64	4.52	26.89

TABLE SHOWING MONTHLY AND ANNUAL PRECIPITATION, ETC.—CONCLUDED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for Year.
72 A	Sandusky.....	2.39	0.35	1.23	2.25	2.00	1.61	1.48	3.32	2.23	1.67	4.73	3.55	26.82
70 B	Sharon Center.....	2.30	0.43	1.30	1.47	2.49	1.47	1.34	3.85	2.22	1.08	4.06	3.41	23.42
67 C	Shenandoah.....	2.69	0.82	1.59	2.30	1.83	1.49	2.42	2.92	1.91	1.46	4.65	3.32	29.90
52 A	Sidney.....	3.56	0.58	1.42	2.99	1.70	3.05	1.27	3.06	0.50	1.19	5.59	3.48	26.95
25 A	Springboro.....	2.00	0.70	1.59	2.13	1.63	3.74	0.95	2.22	1.66	1.62	4.98	2.66	26.95
71 B	Steuben.....	6.12	1.24	1.74	3.13	1.65	1.46	1.27	3.16	0.86	2.01	4.85	3.80	28.80
13 A	Stoutsville.....	2.89	0.43	1.29	1.75	3.01	1.56	1.31	3.50	1.32	1.51	2.63	4.30	26.91
19 C	Sinking Spring.....	4.41	0.70	2.75	0.80	1.10	2.00	1.99	1.65	1.42	1.51	5.40	5.48	26.91
80 B	Sylvania.....	2.71	0.71	1.40	2.46	1.33	1.96	2.98	1.77	1.34	1.28	0.87	4.50	26.07
75 B	Tiffin.....	2.16	0.34	0.91	2.02	2.30	1.56	1.25	2.75	1.11	0.97	5.03	4.23	26.83
80 A	Toledo.....	3.14	0.56	1.33	2.84	1.12	5.41	2.45	2.76	1.39	1.30	5.72	4.85	32.87
77 A	Upper Sandusky.....	2.09	0.18	0.87	1.43	1.35	2.90	1.19	1.84	1.58	0.12	5.17	3.26	22.77
48 C	Urbana.....	4.41	0.47	2.97	2.94	2.18	2.69	1.66	2.45	1.73	1.13	1.93	3.43	26.17
88 A	Van Wert.....	3.01	1.04	1.66	1.80	1.50	1.73	1.35	2.97	1.56	2.01	5.37	4.55	26.40
18 A	Vancsburg.....	2.85	0.63	1.03	2.13	1.90	1.40	1.37	1.77	1.89	1.73	5.83	4.02	26.94
72 B	Vermilion.....	4.60	0.98	1.11	3.15	1.93	1.69	1.30	2.11	1.11	1.13	4.40	3.72	27.31
71 A	Wickery.....	3.30	1.32	2.59	1.40	2.50	3.60	2.54	2.28	2.67	0.31	3.43	3.82	32.66
58 B	Walnut.....	3.27	0.75	1.03	1.38	2.74	3.05	2.12	2.12	2.17	0.66	3.94	3.98	29.06
37 A	Warsaw.....	2.27	0.75	1.62	2.10	2.75	0.64	0.71	2.52	1.18	1.19	6.30	3.72	29.06
81 A	Wauson.....	2.43	0.32	1.76	1.86	2.47	0.84	1.80	1.76	0.51	1.81	1.65	3.24	23.25
16 A	Waynesville.....	3.61	0.33	2.16	2.79	1.37	2.32	1.81	2.43	0.91	0.85	5.04	3.25	28.27
25 B	Wellington.....	4.27	0.82	1.68	2.11	2.31	4.34	1.17	1.94	3.35	1.90	4.75	3.00	33.22
61 C	Westerville.....	3.05	0.69	1.35	3.26	1.74	2.02	1.23	3.69	1.06	1.03	4.75	4.06	28.80
60 C	Wheeler.....	2.62	0.80	0.17	2.12	1.85	1.75	2.16	2.80	4.32	2.66	4.53	4.06	28.05
60 B	Willoughby.....	3.52	0.66	0.81	1.14	1.16	1.34	3.24	2.40	4.29	1.90	4.21	3.51	31.45
64 A	Wooster.....	3.02	1.00	1.96	1.69	1.38	4.20	2.19	2.30	3.92	1.15	3.39	3.46	27.17
57 A	Youngstown.....	3.02	1.22	1.70	1.04	1.22	3.80	1.65	3.15	2.12	1.36	3.49	3.46	27.17
36 A	Zanesville.....	3.98	0.71	1.15	1.47	0.84	1.49	1.50	3.35	1.82	0.88	3.49	3.49	27.17
	State Average.....	4.00	0.69	1.59	2.11	1.80	2.47	2.00	2.96	1.66	1.22	4.11	3.85	28.46
	Highest.....	7.36	2.65	4.12	4.12	4.49	5.41	5.86	6.53	5.86	2.97	6.35	6.72	38.34
	Lowest.....	1.66	0.13	0.17	1.10	0.51	0.64	0.65	0.70	1.00	0.12	0.87	1.65	20.36

TABLE SHOWING THE MONTHLY SNOWFALL IN INCHES AND TENTHS FOR EACH STATION FOR YEAR BEGINNING
JANUARY 1, 1895, AND ENDING DECEMBER 31, 1895.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for Year.
64 A	Akron	14.4	7.3	4.7	0.5					T	T	1.8	13.0	41.7
31 B	Annapolis	2.0	4.5	3.0									15.0	22.5
54 B	Arcanum	12.6	4.0	1.8										
69 A	Ashland	24.5	9.2	4.4	T	T						1.6	8.3	47.4
3 A	Athens	7.5	5.3	8.5										
62 C	Atwater	19.0	4.4	5.2										
61 A	Auburn	9.3	12.1	2.0	0.5						0.8	1.5	7.0	37.1
70 A	Bangorville	18.0	5.5	6.4	T	T					T	1.5	4.8	32.5
49 A	Bellevue	16.8	4.7	4.3	0.5	0.3					T	1.5	8.5	39.9
28 B	Bethany	19.0	5.5	1.0							T	0.0	6.4	34.0
78 A	Benton Ridge		3.1	3.1	0.2	0.2					T	2.2	1.0	26.5
63 D	Bimola	18.5	6.5	4.5							T	5.0	14.8	49.3
61 B	Bisell	19.0	13.3	7.1	0.9	T					2.2	2.9	16.2	61.6
13 C	Basil												3.0	
68 B	Big Prairie	22.5	8.5	11.5							T	1.5	11.0	55.0
39 C	Bladensburg	15.0	3.3	2.8									1.0	26.0
20 A	Bloomington	18.0	6.0	1.0		T								
22 B	Bloomington		7.0	1.0										
79 A	Bowling Green	15.5	3.5	3.5	2.3						0.1		11.0	39.8
76 A	Bucyrus	15.0	1.4	0.5	0.3	0.5					T	2.6	14.4	34.7
84 B	Canal Dover	11.5	6.5	2.8	T						T	0.5	11.0	32.3
63 A	Canton	4.8	6.5	5.4	0.3	T					T	0.8	7.4	25.2
29 B	Camp Dennison	16.5	3.6	3.5									7.0	30.6
35 A	Cambridge	13.0	3.6	1.0	T						T	1.0	5.8	23.4
43 A	Cardington	16.5	4.9	5.5	0.1	0.1					T	1.0	9.8	37.8
81 A	Carrollton	12.0	7.5	6.0	T							1.0	7.0	32.5
21 A	Cedarville	22.2	5.4	0.5								3.0	3.0	32.1
55 A	Celina		3.0	1.5	0.5	T						T	12.0	25.4
18 B	Cherry Fork	5.4	7.0	11.0								0.0	2.0	25.4
29 A	Cincinnati												7.1	
14 A	Circleville	16.5	4.5	1.0									1.5	23.5
22 A	Clarksville	13.2	2.1	1.8	T							T	0.5	3.2
65 A	Cleveland (W.B.)	8.5	3.8	4.4							0.3	1.3	3.2	20.8
65 B	Cleveland (Hyde)	13.1	7.6	7.2							2.1	3.8	12.5	46.3
21 B	Clifton	15.5	4.3	1.5								0.5	4.7	26.5
9 A	Coalton	15.5	8.0	6.5		T						T	4.0	34.0
58 B	Colebrook	10.9	4.2	2.8	0.5						5.0	1.0	5.0	29.4
16 B	Cynthiana	31.0	8.0	11.0		T								
41 A	Columbus	18.9	5.9	2.2								0.1	3.4	30.5
28 B	Dayton	23.5		2.5	T							T	4.5	

TABLE SHOWING THE MONTHLY SNOWFALL IN INCHES AND TENTHS FOR EACH STATION, ETC.—CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for Year.
88 A	Defence.....	13.8	8.0	4.0	.....	.....	.....	.....	.....	.....	.....	.....	17.1	42.1
89 A	Demos.....	15.4	11.4	2.5	.....	.....	.....	.....	.....	.....	.....	.....	7.0	40.5
85 C	Dupont.....	22.0	8.0	2.5	.....	.....	.....	.....	.....	.....	.....	.....	27.0	44.5
57 B	Elsworth.....	17.2	6.5	2.8	.....	T	.....	.....	.....	T	.....	.....	4.2	28.0
66 B	Ellyria.....	2.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.2	.....
92 B	Payetteville.....	21.4	5.3	5.2	.....	.....	.....	.....	.....	.....	.....	.....	5.8	38.7
72 A	Findlay.....	20.0	3.0	2.0	.....	T	.....	.....	.....	.....	.....	.....	5.8	38.0
75 A	Postoria.....	18.0	.....	2.3	.....	.....	.....	.....	.....	.....	.....	.....	11.0	.....
19 A	Frankfort.....	18.0	5.0	3.0	.....	T	.....	.....	.....	.....	.....	.....	17.0	.....
62 B	Garrettsville.....	13.1	.....	4.8	.....	.....	.....	.....	.....	.....	.....	.....	1.0	.....
23 A	Georgetown.....	.....	8.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.3	.....
40 A	Granville.....	14.3	2.1	2.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	35.5
19 B	Gratiot.....	17.0	7.5	1.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	35.8
49 C	Greenfield.....	.....	4.0	4.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
56 A	Green Hill.....	10.1	8.8	4.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	27.1
54 A	Greenville.....	10.0	3.0	2.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	24.5
5 B	Guysville.....	7.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4 B	Hackney.....	6.0	.....	6.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8 A	Hanging Rock.....	8.5	8.0	4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
59 A	Harbor.....	17.5	7.5	7.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
86 A	Hedges.....	26.0	5.0	5.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
65 A	Hebardsville.....	9.0	6.4	8.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
60 A	Hillhouse.....	37.0	24.0	10.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19 A	Hillsboro.....	16.5	5.0	4.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
62 A	Hiram.....	9.5	5.0	2.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
64 B	Hudson.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
28 A	Jacksonboro.....	24.0	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
50 A	Kenton.....	14.5	4.0	1.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
42 A	Kilbourne.....	12.5	4.5	6.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
38 A	Killbuck.....	11.1	1.7	6.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13 B	Lancaster.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
85 A	Leipsic.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39 B	Levering.....	19.3	3.0	1.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11 A	Logan.....	16.6	4.0	8.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2 B	Lowell.....	7.9	6.3	1.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
58 A	Lordstown.....	4.0	4.0	8.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2 A	Marietta.....	14.0	3.5	8.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
44 A	Marion.....	11.5	6.9	7.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10 A	McArthur.....	16.4	1.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4 A	McConnellsville.....	6.5	5.0	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
67 A	Medina.....	10.2	8.4	6.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39 A	Millfordton.....	21.5	2.0	4.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		21.5	6.0	2.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE SHOWING THE MONTHLY SNOWFALL IN INCHES AND TENTHS FOR EACH STATION, ETC. — CONTINUED.

Number.	Stations.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for Year.
12 A	Milligan	12.0	6.0	2.0	1.0	1.0	...	...	...	...	...	...	5.0	26.0
56 B	Millport .....	...	3.5	3.0	...	...	...	...	...	...	...	...	7.0	...
82 A	Montpelier	13.0	3.5	3.5	2.0	1.0	...	...	...	...	...	...	12.3	37.3
84 A	Napoleon	15.2	1.3	2.0	2.0	1.0	...	...	...	...	...	...	3.0	40.5
31 A	New Alexandria	14.0	13.0	14.5	4.5	...	...	...	...	...	...	...	16.0	57.5
63 B	New Berlin	12.7	2.3	3.5	...	...	...	...	...	...	...	...	8.5	27.0
51 A	New Bremen	9.6	3.7	4.0	...	...	...	...	...	...	...	...	10.5	30.8
34 A	New Comerstown	8.5	5.0	...	...	...	...	...	...	...	...	...	6.0	19.5
14 C	New Holland	29.2	7.0	2.1	1.0	0.5	...	...	...	...	...	...	2.2	41.2
37 B	New Moscow .....	...	...	2.7	...	...	...	...	...	...	...	...	9.9	...
27 A	New Paris	14.0	2.0	0	...	...	...	...	...	...	...	...	11.0	27.0
56 C	New Waterford	26.5	2.9	2.7	...	...	...	...	...	...	...	...	2.0	34.1
48 A	North Lewisburg	25.0	6.5	6.0	...	...	...	...	...	...	...	...	3.5	41.0
65 C	North Royalton	11.0	13.0	5.0	1.0	...	...	...	...	...	...	...	9.0	40.0
71 A	Norwalk	11.0	4.0	2.5	0.5	...	...	...	...	...	...	...	1.0	40.0
49 B	Northwood	14.7	4.0	9.0	1.0	...	...	...	...	...	...	...	1.5	31.0
66 A	Oberlin	5.2	4.3	2.6	...	...	...	...	...	...	...	...	12.5	27.1
41 B	O. S. University	18.1	9.1	1.1	...	...	...	...	...	...	...	...	0.1	3.8
58 C	Orangeville .....	...	3.0	3.0	...	...	...	...	...	...	...	...	3.0	32.2
85 B	Ottawa	22.0	3.0	2.0	...	...	...	...	...	...	...	...	18.5	47.5
40 B	Pataskala	13.2	4.7	1.5	...	...	...	...	...	...	...	...	5.4	25.2
34 C	Pecoli	15.5	4.5	4.5	...	...	...	...	...	...	...	...	1.0	...
36 B	Philo .....	...	...	...	...	...	...	...	...	...	...	...	4.6	...
47 A	Plattaburg	15.0	8.0	...	...	...	...	...	...	...	...	...	3.0	26.0
6 A	Pomeroy	11.9	7.0	8.0	...	...	...	...	...	...	...	...	0.8	...
17 A	Portsmouth	12.5	6.7	5.0	2.2	...	...	...	...	...	...	...	1.3	27.7
84 B	Ridgeville Corners	14.0	1.0	6.0	0.3	...	...	...	...	...	...	...	14.0	37.3
24 B	Ripley	13.5	6.1	4.8	...	...	...	...	...	...	...	...	3.1	37.5
45 A	Richwood	16.2	8.0	4.7	...	...	...	...	...	...	...	...	0.3	34.7
68 C	Rockman	10.1	5.7	1.6	...	...	...	...	...	...	...	...	5.5	23.4
73 A	Rocky Ridge	12.9	3.1	3.1	1.4	...	...	...	...	...	...	...	5.5	32.9
48 B	Rosewood	16.0	3.5	2.0	...	...	...	...	...	...	...	...	2.4	29.4
72 A	Sandusky	13.7	3.0	6.3	0.4	...	...	...	...	...	...	...	3.5	29.4
67 B	Sharon Center	9.0	9.0	0.5	...	...	...	...	...	...	...	...	7.9	32.4
70 C	Shenandoah	15.2	4.7	5.9	1.1	...	...	...	...	...	...	...	1.1	...
52 A	Sidney	16.6	3.2	1.5	...	...	...	...	...	...	...	...	4.5	33.7
25 A	Springboro .....	...	2.0	...	...	...	...	...	...	...	...	...	0.2	32.9
71 B	Steubenville	11.0	3.8	7.1	...	...	...	...	...	...	...	...	1.8	...
13 A	Stoutsville	21.0	12.0	3.0	...	...	...	...	...	...	...	...	1.0	37.0
19 C	Sinking Spring .....	...	...	...	...	...	...	...	...	...	...	...	3.0	42.5
80 B	Sylvania	19.0	3.0	6.0	...	...	...	...	...	...	...	...	11.0	...
7 A	Thurman	8.0	7.0	5.0	0.8	...	...	...	...	...	...	...	5.5	26.3

TABLE SHOWING THE MONTHLY SNOWFALL IN INCHES AND TENTHS FOR EACH STATION, ETC.—CONCLUDED.

Number.	Station.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for Year.
75 B	Tiffin.....	17.0	5.8	6.2	1.0	T	.....	.....	.....	.....	.....	3.2	11.0	44.2
80 A	Toledo.....	22.3	3.0	5.2	.....	.....	.....	.....	.....	.....	T	3.7	23.5	57.7
77 A	Upper Sandusky.....	16.5	4.0	5.0	.....	.....	.....	.....	.....	.....	.....	2.5	12.0	40.0
48 C	Urbana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....
88 A	Van Wert.....	13.7	4.5	3.4	0.8	T	.....	.....	.....	.....	T	3.0	17.5	42.9
18 A	Vancsburg.....	10.0	5.7	4.0	.....	.....	.....	.....	.....	.....	.....	7.0	1.2	20.9
72 B	Vermillion.....	19.0	8.2	9.5	0.5	.....	.....	.....	.....	.....	0.2	7.0	22.0	66.4
74 A	Vicksburg.....	13.5	5.2	4.6	1.0	T	.....	.....	.....	.....	T	3.7	11.7	42.7
14 B	Walton.....	13.0	8.0	4.8	.....	.....	.....	.....	.....	.....	.....	1.4	1.4	29.1
58 B	Warren.....	13.6	9.9	7.0	.....	.....	.....	.....	.....	.....	T	1.1	12.5	43.0
7 A	Warsaw.....	4.6	.....	1.5	T	T	.....	.....	.....	.....	T	1.1	6.2	.....
81 A	Wauson.....	18.1	4.2	8.9	1.4	T	.....	.....	.....	.....	0.3	4.6	22.0	60.4
16 A	Waverly.....	9.1	5.2	5.3	.....	T	.....	.....	.....	.....	.....	1.1	2.0	21.9
52 B	Waynesville.....	1.7	2.0	1.5	T	.....	.....	.....	.....	.....	.....	2.0	2.3	23.7
61 C	Wellington.....	.....	.....	4.5	T	.....	.....	.....	.....	.....	.....	1.0	.....	.....
40 C	Westerville.....	16.0	4.0	1.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
60 B	Wesley.....	.....	5.5	3.5	0.5	.....	.....	.....	.....	.....	.....	1.0	4.8	18.0
40 C	Wesleyer.....	3.2	5.0	2.5	.....	.....	.....	.....	.....	.....	.....	0.5	8.2	25.1
68 A	Willoughby.....	12.2	3.4	4.3	0.2	T	.....	.....	.....	.....	T	.....	4.5	.....
57 A	Wooster.....	3.5	6.6	4.5	T	.....	.....	.....	.....	.....	.....	.....	.....	.....
57 A	Youngstown.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	State mean.....	14.6	5.6	3.9	0.2	T	.....	.....	.....	T	0.2	1.0	7.1	32.6
	Highest.....	37.0	24.0	14.5	4.5	0.8	.....	.....	.....	T	10.0	7.0	27.0	83.5
	Lowest.....	2.0	1.0	.....	T	.....	.....	.....	.....	T	.....	.....	.....	16.5
	Range.....	35.0	23.0	14.5	4.5	0.8	.....	.....	.....	T	10.0	7.0	27.0	77.0

METEOROLOGICAL SUMMARY FOR 1895, AT WAUSEON, OHIO, COMPARED WITH THE PAST TWENTY-FIVE YEARS.

STATION IN N. LAT. $41^{\circ} 36'$; W. LON. $84^{\circ} 7'$; ALTITUDE ABOVE SEA LEVEL, 800 FEET.

Barometer — Mean for the year, actual pressure, 29.202 inches; mean, reduced to sea level, 30.059 inches. Highest during the year, 30.645, January 8th; lowest, 29.193, November 26th. Annual range, 1.452; mean daily range, .203 inch; greatest daily range, 1.050, November 26th; least, .026, April 14th.

Relative Humidity — Mean for the year, 70.6 per cent. The least was 20.0 per cent., September 19th.

Temperature — $48^{\circ}.2$; normal for 25 years, $47^{\circ}.9$. The warmest year was $50^{\circ}.8$, 1894; the coldest, $44^{\circ}.2$, 1875, and $44^{\circ}.6$, 1885.

The mean temperature of the winter (December, January and February) was $27^{\circ}.0$; normal, $25^{\circ}.4$. The warmest winter was $34^{\circ}.9$ in 1889-90; the coldest, $17^{\circ}.2$, in 1874-75, and $17^{\circ}.3$, in 1884-85. Mean for the spring (March, April and May), $47^{\circ}.2$; normal, $45^{\circ}.9$. The warmest spring was $51^{\circ}.6$, in 1878; the coldest, $42^{\circ}.0$, in 1883, and $42^{\circ}.2$, in 1885. Mean for the summer (June, July and August), $72^{\circ}.4$; normal, $70^{\circ}.7$. The warmest summer, $72^{\circ}.5$, was in 1872 and 1876; the coldest, $67^{\circ}.3$, in 1883. Mean for the autumn (September, October and November), was $49^{\circ}.7$, which is just the normal. Warmest Autumn, $55^{\circ}.0$, in 1881; coldest, $46^{\circ}.1$, in 1875. Mean for the five months, November 1st to March 31st, $29^{\circ}.7$; normal, $29^{\circ}.0$. Mean for the five months, May 1st to September 30th, $69^{\circ}.1$; normal, $66^{\circ}.8$.

Highest temperature during the year, 100° , June 3rd; mean of annual maxima, $97^{\circ}.3$. Highest annual maximum, $104^{\circ}.5$, in 1874; lowest, $92^{\circ}.5$, in 1882.

Lowest temperature during the year, $-16^{\circ}.4$, February 5th; mean of annual minima, $-17^{\circ}.5$. Lowest annual minimum, $-32^{\circ}.4$, in 1884; highest $-9^{\circ}.0$, in 1878.

Annual range of temperature, $116^{\circ}.0$; normal, $114^{\circ}.8$. Greatest, $127^{\circ}.7$, in 1884; least, $100^{\circ}.3$, in 1890. Total range, $136^{\circ}.9$.

Mean daily range of temperature, $24^{\circ}.7$; normal, $21^{\circ}.0$. Greatest daily range, $45^{\circ}.3$, July 5th; least, $1^{\circ}.8$, November 23rd.

Mean temperature of the warmest day, $84^{\circ}.8$, September 22nd; of the coldest day, $-5^{\circ}.3$, January 12th.

Number of thunder storms during the year, 37; average, 37.

Precipitation — Total for the year, 29.06 inches; normal, 36.86 inches. The greatest annual rainfall was 52.55 inches in 1892; the least, 28.49 inches, in 1888. The largest monthly rainfall was 6.72, in December, and the smallest was 0.64, in June. The total for the winter months was 5.21; normal, 8.04; for the spring, 6.23; normal, 10.63; for the summer, 4.17; normal, 10.36; for the autumn, 8.67; normal, 8.28. The total for the six months (April 1st to September 30th), was 10.20; normal, 20.35. Total from June 1st to October 31st, 6.54; normal, 15.46.

Total snowfall for the year, 60.4 inches; normal, 49.7 inches. Largest annual snowfall, 78.2, in 1875; smallest, 27.7, in 1888. The greatest depth of snowfall in one winter was 81.0 inches, in 1876-77; the least, 27.2, in 1889-90. The greatest depth in any one month was 41.7, in March 1877.

Wind — Prevailing direction from, S. W.; normal, W. Of the 1,095 observations during the year, it was from the N., 58 times; N. E., 125; E., 71; S. E., 87; S., 160; S. W., 195; W., 186; N. W., 172; calm, 41.

Cloudiness—Average for the year, .49; normal, 58. Cloudiest month, January, .70; clearest, September, 36.

Number of clear days in the year, 128; normal, 99. Number of fair days, 137; normal, 119. Number of cloudy days, 100; normal, 147. Number of days .01 inch or more of rain or snow fell, 128; normal, 154.

Halos—Number during the year, 74 solar and 20 lunar. Of these, 28 were followed by rain or snow within 12 hours; 10 within 18 hours; 9 within 24 hours; 9 within 36 hours, and 38 not within 40 hours.

Last hard frost, May 22; average date, May 14th. First hard frost of autumn, September 24th; average date, October 1st.

Wheat harvest began June 26th, 12 days earlier than the average date. Oats harvest began July 18th; average date, July 29th.

THOS. MERRILL, *Observer*.

TIME OF BLOSSOMING OF PLANTS AT WAUSEON, OHIO, IN 1895.
THOS. MIKESELL, OBSERVER.

Common Name.	Botanical Name.	Date.
Shepherd's Purse	Capsella Bursa-pastoris	April 13
Crocus	Crocus vernalis	" 13
Spring Beauty	Claytonia Virginica	" 18
Liverwort	Hepatica triloba	" 19
Pepper Root	Dentaria laciniata	" 20
Pompon Hyacinth	Hyacinthus	" 20
Yellow Dog-tooth Violet	Erythronium Americanum	" 22
White Dog-tooth Violet	" albidum	" 23
Small-flowered Crowfoot	Ranunculus abortivus	" 24
Blood Root	Sanguinaria Canadensis	" 24
Bitter Cress	Cardamine rhomboidea var purpurea	" 24
Spring Cress	"	" 25
Pepper Root	Dentaria heterophylla	" 25
Long-spurred Violet	Viola rostrata	" 25
Dandelion	Taraxacum officinale	" 26
Blue Violet	Viola palmata	" 26
Corn Gromwell	Lithospermum arvense	" 27
Apricot	Prunus Armeniaca	" 27
Pansy	Viola tricolor	" 27
Foot-leaved Violet	" pedata	" 29
Larkspur Violet	" pedatifida	" 29
Cream-colored Violet	" striata	" 30
Downy Yellow Violet	" pubescens	" 30
Muhlenberg's Violet	" canina	" 30
Arrow-leaved Violet	" sagittata	May 1
Wild Phlox	Phlox divaricata	" 1
Hairy Phlox	" pilosa	" 2
Moss Pink	" subulata	" 4
Dwarf Iris	Iris pumila	" 4
Yellow Water Crowfoot	Ranunculus multifidus	" 4
Bleeding Heart	Dicentra spectabilis	" 5
Bush Honeysuckle .....	.....	" 5
Tulip	Tulipa gesneriana	" 7
Cranesbill	Geranium maculatum	" 8
Wake Robin	Trillium grandiflorum	" 8
Wild Columbine	Aquilegia Canadensis	" 8
Horse Radish	Nasturtium armoracea	" 9
Quince	Cydonia vulgaris	" 9
Mandrake	Podophyllum peltatum	" 10
Flower-de-luce	Iris sambucina	" 11
Indian Turnip	Arisema triphyllum	" 11
Tree Peony	Peonia moutan, var. papaveracea	" 11
Parrot Tulip	Tulipa	" 11
Five Finger	Potentilla Canadensis	" 11
German Iris	Iris Germanica	" 17
Yellow Iris	" pseudacorus	" 18
Wild Lupine	Lupinus perennis	" 19
Garden Columbine	Aquilegia vulgaris	" 19
Sweet Scabious	Erigeron annuus	" 25
Common Fleabane	" philadelphicus	" 26
Red Peony	Pœonia officinalis, var. rubra	" 26
White Mustard	Brassica alba	" 26
Sheep Sorrel	Rumex acetosella	" 26
Rye	Secale cereale	" 28
White Clover	Trifolium repens	" 28
June Grass	Poa pratensis	" 29
Bachelor's Button	Centaurea cyanus	" 29
Lemon Lily	Lilium bulbiferum	" 30
Red Clover	Trifolium pratense	" 30
Perennial Phlox	Phlox paniculata	" 30

TIME OF BLOSSOMING OF PLANTS AT WAUSEON, OHIO, IN 1895.
CONTINUED.

Common Name.	Botanical Name.	Date.
Alsike Clover.....	<i>Trifolium hybridum</i>	May 31
White Peony.....	<i>Paeonia albiflora</i> , var. <i>Whitleji</i>	June 1
Black Mustard.....	<i>Brassica nigra</i>	3
Daisy Fleabane.....	<i>Erigeron strigosus</i>	3
Hop Clover.....	<i>Trifolium agrarium</i>	4
Orchard Grass.....	<i>Dactylus glomerata</i>	5
Pink Peony.....	<i>Paeonia officinalis</i> , var. <i>Humei</i>	5
Coreopsis.....	<i>Coreopsis lanceolata</i>	6
Sweet William.....	<i>Dianthus barbatus</i>	7
Clammy Locust.....	<i>Robinia viscosa</i>	7
Solomon's Seal.....	<i>Polygonatum giganteum</i>	8
False Solomon's Seal.....	<i>Similacina racemosa</i>	10
Yarrow.....	<i>Achillea millefolium</i>	11
Yellow Wood Sorrel.....	<i>Oxalis corniculati</i>	11
Wild Morning Glory.....	<i>Convolvulus sepium</i> , var. <i>Americanus</i> ...	12
May Weed.....	<i>Anthemis cotula</i>	12
Perennial Pea.....	<i>Lathyrus latifolius</i>	13
Parsnip.....	<i>Pastinaca sativa</i>	17
Poppy.....	<i>Papaver somniferum</i>	17
Dwarf Larkspur.....	<i>Delphinium ajacis</i>	18
Green Dragon.....	<i>Arisæma Dracontium</i>	18
Ohio Blue Grass.....	<i>Poa compressa</i>	22
Tall Larkspur.....	<i>Delphinium elatior flore-pleno</i>	22
Ground Cherry.....	<i>Physalis Virginiana</i>	23
Day Lily.....	<i>Hemerocallis fulva</i>	24
Butterfly Weed.....	<i>Asclepias tuberosa</i>	25
Sweet Clover.....	<i>Melilotus alba</i>	25
Hollyhock.....	<i>Althea rosea</i>	25
Purslane.....	<i>Portulaca oleracea</i>	26
Basswood.....	<i>Tilia Americana</i>	26
Mullein.....	<i>Verbascum Thapsus</i>	27
Portulaca.....	<i>Portulaca grandiflora</i>	27
Petunia.....	<i>Petunia hybrida</i>	27
Carnation.....	<i>Dianthus caryophyllus</i>	27
Red Top.....	<i>Agrostis alba</i> , var. <i>vulgaris</i>	28
Perennial Larkspur.....	<i>Delphinium formosum</i>	29
Catnip.....	<i>Nepeta cataria</i>	29
Common Milkweed.....	<i>Asclepias cornuti</i>	July 1
Hibiscus.....	<i>Hibiscus Africanus</i>	1
Plantain.....	<i>Plantago major</i>	5
Common Thistle.....	<i>Cnicus lanceolatus</i>	6
Prickly Lettuce.....	<i>Lactuca scariola</i>	8
Swamp Milkweed.....	<i>Asclepias incarnata</i>	9
Butter and Eggs.....	<i>Linaria vulgaris</i>	9
Blue Vervain.....	<i>Verbena hastata</i>	11
White Vervain.....	" <i>urticæfolia</i>	12
Morning Glory.....	<i>Convolvulus major</i>	17
Teasel.....	<i>Dipsacus Sylvestris</i>	19
Common Healall.....	<i>Brunella vulgaris</i>	20
Tiger Lily.....	<i>Lilium tigrinum</i>	24
Cone-flower.....	<i>Rudbeckia hirta</i>	24
High Skullcap.....	<i>Scutellaria canescens</i>	25
Verbena.....	<i>Verbena hybrida</i>	25
Spearmint.....	<i>Mentha viridis</i>	25
Wild Lettuce.....	<i>Lactuca Canadensis</i>	26
Button Bush.....	<i>Cephalanthus occidentalis</i>	28
Ironweed.....	<i>Vernonia noveboracensis</i>	29
Tick Trefoil.....	<i>Desmodium canescens</i>	29
Burdock.....	<i>Arctium lappa</i>	30
Aster—Schiller.....	<i>Aster chinensis</i>	31

TIME OF BLOSSOMING OF PLANTS AT WAUSEON, OHIO, IN 1895.
CONCLUDED.

Common Name.	Botanical Name.	Date.
Tansy	Tanacetum vulgare	July 31
Swamp Thistle	Cnicus muticus	August 5
Jimson	Datura tatula	" 5
Boneset	Eupatorium perfoliatum	" 8
Gladiolus	Gladiolus gandavensis hybrida	" 9
Common Smartweed	Polygonum Hydropiper	" 11
Figweed	Chenopodium album	" 14
Common Ragweed	Ambrosia artemisiifolia	" 15
Wild Sunflower	Helianthus doronicoides	" 15
Great Ragweed	Ambrosia trifida	" 17
Cockle Burr	Xanthium Canadense	" 18
Tickseed Sunflower	Coreopsis trichosperma	" 19
Fireweed	Erechtites hieracifolia	" 22
Spanish Needles	Bidens bipinnata	" 24
Swamp Beggarsticks	" connata	" 29

OBSERVATIONS OF FOREST AND OTHER TREES, SHRUBS, VINES, ETC., AT WAUSEON, OHIO, IN 1894
THOS. MIKESSELL, OBSERVER.

Common Name.	In Bud.	First Fully Formed Leaf.	In Full Leaf.	In Blossom.	Fruit Ripe.	Complete Change of Foliage.	Divested of Leaves.	Seeds Plentiful, or Scant.
Yellow Parilla.....	April 27	May 5	May 14	May 30	Aug. 25	Oct. 11	Oct. 18	Scant.
Prickly Ash.....	" 30	" 7	" 17	" 12	" 18	Sept. 18	" 2	"
Bitter Sweet.....	May 1	" 7	" 12	June 10	" 25	Oct. 2	" 16	"
Wahoo.....	April 18	April 29	" 5	" 14	" 28	Sept. 18	" 2	Full.
Virginia Creeper.....	" 25	May 8	" 11	July 4	" 24	Oct. 3	" 16	Scant.
Bladder Nut.....	" 25	" 4	" 10	May 8	None.	Oct. 3	" 16	None.
Ohio Buckeye.....	" 29	" 7	" 14	" 17	"	" 11	" 18	"
Horse Chestnut.....	" 25	April 28	" 6	" 9	"	" 11	" 18	"
Sugar Maple.....	" 25	May 8	" 11	April 27	Aug. 28	" 2	" 22	Scant.
White Maple.....	" 20	May 2	" 9	" 5	May 23	" 2	" 15	Full.
Red Maple.....	" 19	" 2	" 10	" 8	Aug. 25	" 2	" 18	"
Ash-leaved Maple.....	" 26	" 5	" 12	" 24	Aug. 25	" 11	" 11	"
Staghorn Sumac.....	May 2	" 7	" 25	June 25	Sept. 5	" 2	" 15	"
Dwarf Sumac.....	May 4	" 9	" 8	June 27	Sept. 20	" 2	" 18	"
Poison Ivy.....	April 30	" 7	June 20	July 17	Aug. 5	" 11	" 18	"
Bristly Locust.....	May 1	" 8	May 17	May 11	None.	" 11	" 20	None.
Wistaria.....	" 2	" 9	" 22	" 29	"	" 11	" 15	"
Coffee Nut.....	" 2	" 8	June 5	Frozen.	"	" 2	" 28	"
Flowering Almond.....	" 1	" 9	May 18	May 4	"	" 22	" 18	"
Meadow Sweet.....	April 24	" 4	" 12	May 17	"	" 11	" 30	"
Swamp Rose.....	" 24	" 3	" 11	July 11	"	" 22	Nov. 3	Full.
Dwarf Wild Rose.....	" 26	" 4	" 8	May 29	Sept. 8	" 23	" 2	None.
Sweet Briar.....	" 27	" 6	" 12	".....	None.	" 16	Oct. 18	"
European Mountain Ash.....	" 24	" 3	" 9	May 18	"	" 11	"	"

OBSERVATIONS OF FOREST AND OTHER TREES, SHRUBS, VINES, ETC., AT WAUSEON, OHIO, IN 1895.—CONTINUED.

Common Name.	In Bud.	First Fully Formed Leaf.	In Full Leaf.	In Blossom.	Fruit Ripe.	Complete Change of Foliage.	Divested of Leaves.	Seeds Plentiful, or Scant.
Scarlet-fruited Thorn	April 25	May 2	May 8	May 6	Sept. 10	Oct. 11	Oct. 20	Full.
Cockspur Thorn	" 29	" 3	" 9	May 25	Oct. 20	" 24	Nov. 3	"
Mock Orange; Syringa	" 29	" 6	" 11	" 30	None.	" 23	Nov. 3	None.
Missouri Currant	" 13	April 22	" 3	April 30	July 25	" 2	Oct. 18	Full.
Flowering Dogwood	May 4	May 12	" 24	None.	None.	" 11	" 20	None.
Kinnikinnik	April 26	" 7	" 16	June 18	Aug. 25	" 23	" 30	Scant.
Pigeon Berry	" 20	" 3	" 12	" 12	" 20	" 11	" 18	"
Common Elder	" 18	" 2	" 9	" 20	" 12	" 8	" 20	Full.
Snowball	May 2	" 7	" 12	May 30	None.	" 11	" 20	None.
Arrow-wood	April 19	April 29	" 7	May 27	Sept. 28	" 11	" 22	Scant.
Black Haw	" 20	" 30	" 6	" 25	Oct. 6	" 11	" 25	"
Snowberry	" 22	May 2	" 6	June 2	Aug. 20	" 23	" 30	"
Trumpet Honeysuckle	" 10	April 28	" 7	" 2	None.	" 80	Nov. 10	None.
Wild Sweet Honeysuckle	" 7	" 21	" 6	" 6	"	" 30	" 10	"
Small-flowered Honeysuckle	" 2	" 20	" 5	May 10	July 6	" 2	Oct. 18	Scant.
Persimmon	May 12	May 10	" 27	June 12	None.	" 11	" 22	None.
Common Lilac	April 17	April 23	" 4	May 5	"	" 11	" 18	"
Persian Lilac	" 17	" 25	" 6	May 7	"	" 11	" 18	"
White Ash	" 29	May 5	" 13	" 3	"	" 2	" 8	"
Black Ash	" 27	" 9	" 15	" 1	"	" 3	" 10	"
Trumpet Creeper	May 4	" 12	" 30	June 21	Aug. 30	" 11	" 20	Scant.
Hardy Catalpa	" 10	" 18	June 4	June 22	Sept. 30	" 11	" 25	Full.
Sassafras	" 4	" 8	May 25	May 18	None.	" 2	" 12	None.
Red Elm	April 29	" 8	" 24	April 26	May 22	" 11	" 20	Full.
White Elm	" 26	" 5	" 10	" 19	" 15	" 11	" 25	"

OBSERVATIONS OF FOREST AND OTHER TREES, SHRUBS, VINES, ETC., AT WAUSEON, OHIO, IN 1895.—CONTINUED.

Common Name.	In Bud.	First Fully Formed Leaf.	In Full Leaf.	In Blossom.	Fruit Ripe.	Complete Change of Foliage.	Divested of Leaves.	Seeds Plentiful, or Scant.
Osage Orange	May 2	May 9	May 19	June 24	Oct 10	Oct. 22	Nov. 3	Full.
Buttonwood	" 10	" 22	June 12	None.	None.	11	Oct. 25	None.
Black Walnut	" 2	" 10	May 24	May 18	Sept. 30	" 11	" 18	Full.
Shell-bark Hickory	" 2	" 8	May 12	" 11	Oct. 2	" 11	" 25	"
Large Shell-bark Hickory	" 1	" 7	" 11	" 10	" 2	" 11	" 28	"
Small-fruited Hickory	" 2	" 9	" 18	" 17	" 1	" 11	" 25	"
Mockernut Hickory	" 2	" 9	" 17	" 17	" 10	" 23	Nov. 1	"
Black Hickory	" 4	" 10	" 16	" 15	" 12	" 11	" 1	"
Bitternut Hickory	" 4	" 10	" 18	" 17	" 18	" 11	Oct. 28	"
White Oak	" 6	" 11	" 25	" 16	" 15	" 28	Nov. 6	"
Mossy-cup Oak	" 3	" 9	" 17	" 14	" 5	" 11	" 1	"
Swamp White Oak	" 1	" 7	" 14	" 12	" 10	" 11	Oct. 18	"
Red Oak	" 2	" 8	" 14	" 11	" 18	" 11	" 22	"
Scarlet Oak	" 4	" 9	" 16	" 13	" 15	" 22	" 30	"
Black Oak	" 3	" 8	" 16	" 14	" 18	" 22	Nov. 5	"
Pin Oak	" 3	" 8	" 15	" 14	" 18	" 11	Oct. 30	"
Common Hazel	April 24	" 2	" 9	April 18	" 5	" 11	" 28	Scant.
Ironwood	" 18	April 28	" 12	May 3	Sept. 20	" 2	" 15	"
Water Beech	" 19	May 1	" 10	May 30	May 25	" 11	" 18	Full.
Prairie Willow	" 28	" 2	" 7	" 13	May 10	" 22	Nov. 1	Scant.
Golden Willow	" 20	April 27	" 6	May 2	June 4	" 22	" 1	"
Black Willow	" 21	" 30	" 8	" 6	May 28	" 11	Oct. 30	Full.
Quaking Aspen	" 18	" 25	" 8	April 6	June 12	" 22	Nov. 1	"
Michigan Poplar	May 4	May 12	" 27	April 24	June 4	" 11	Oct. 25	"
Silver-leaved Poplar	" 3	" 8	" 15	" 13	None.	" 23	Nov. 1	None.

OBSERVATIONS OF FOREST AND OTHER TREES, SHRUBS, VINES, ETC., AT WAUSEON, OHIO, IN 1895.—CONCLUDED.

Common Name.	In Bud.	First Fully Formed Leaf.	In Full Leaf.	In Blossom.	Fruit Ripe.	Complete Change of Foliage.	Divested of Leaves.	Seeds Plentiful, or Scant.
Lombardy Poplar.....	May 1	May 5	May 11	None.	None.	Oct. 30	Nov. 10	None.
Cottonwood.....	" 1	" 7	" 14	April 25	May 30	" 22	Nov. 30	Full.
Balm of Gilead.....	April 23	" 22	" 9	" 21	None.	" 11	" 25	None.
Common Greenbriar.....	May 1	" 7	" 14	May 29	"	" 15	" 28	"

The frosts of the spring prevented the blossoming and the forming of seeds, in several species, and in some the leaves were killed and new growth came on. The drouth interfered, also, with the maturing of seeds in some species.

OBSERVATIONS OF THE MIGRATIONS OF BIRDS AT WAUSEON, OHIO, IN 1895. THOS. MIKESELL, OBSERVER.

Name of Bird.	* General Habits.	Is It Common or Rare?	When Was It First Seen?	About How Many Were Seen?	When Was It Next Seen?	When Did It Become Common?	When Was It Last Seen.
Raven	W. V.	Rare.	a	..	.....	b	April 4.
Tree Sparrow	"	Common.	a	8	.....	b	" 21.
Snowbird	"	"	Nov. 8.	8	Nov. 10.	c	" d
Skylark	S. R.	"	d	..	.....	April 10.	" d
White-rumped Shrike.	"	"	d	..	.....	b	" d
Crow	"	Rare.	Jan. 18.	2	Jan. 19.	April 2.	" d
Song Sparrow	"	Common.	Feb. 27.	1	Mar. 2.	April 5.	Nov. 16.
Robin ¹	"	"	" 28.	1	" 13.	" 8.	" 7.
Crow Blackbird ²	"	"	Mar. 18.	3	" 19.	" 7.	" 4.
Meadow Lark	"	"	" 19.	1	" 21.	" 10.	" 7.
Killdeer	"	"	" 23.	3	" 24.	" 18.	" 2.
Red-winged Blackbird ³	"	"	" 23.	6	" 24.	" 10.	Oct. 28.
Yellow-winged Woodpecker	"	"	" 26.	2	April 2.	" 25.	Oct. 25.
Cowbird ⁴	"	"	" 26.	15	" 23.	" 18.	" 21.
Bluebird ⁵	"	Rare.	" 27.	1	" 23.	b	" 27.
Grass Finch	"	Abundant.	April 3.	1	" 4.	April 8.	Nov. 9.
White-browed, Yellow-throated Warbler, spring	T. V.	Rare.	" 4.	1	" 5.	b	April 26.
White-browed, Yellow-throated Warbler, fall	"	"	Oct. 11.	3	Oct. 12.	b	Oct. 28.
Chipping Sparrow ¹	S. R.	Common.	April 5.	3	April 6.	April 20.	" 18.
Red-headed Woodpecker ¹	"	"	" 5.	2	" 6.	" 28.	" 19.
Field Sparrow	"	"	" 6.	3	" 7.	" 25.	" 21.
Chewink	"	"	" 7.	3	" 9.	" 25.	Nov. 4.
Kingfisher	"	"	" 8.	1	" 12.	b	Nov. 18.
Spotted Sandpiper ⁶	"	Rare.	" 17.	1	" 29.	b	Sept. 22.
Brown Thrush ¹	"	Common.	" 20.	2	" 21.	May 5.	Oct. 16.

OBSERVATIONS OF THE MIGRATIONS OF BIRDS AT WAUSEON, OHIO, IN 1895—CONTINUED.

Name of Bird.	*General Habits.	Is It Common or Rare?	When Was It First Seen?	About How Many Were Seen?	When Was It Next Seen?	When Did It Become Common?	When Was It Last Seen?
Barn Swallow ¹	S. R.	Common.	April 23	1	April 24	May 1	Sept. 30.
Yellow-winged Sparrow ⁶	"	"	" 25	1	" 26	" 5	" 25.
Yellow Warbler.....	"	"	" 26	1	" 27	" 5	" 18.
House Wren ⁵	"	Rare.	" 28	1	" 30	" 6	" 14.
Baltimore Oriole.....	"	Common.	" 29	3	" 30	May 5	" 30.
Warbling Vireo.....	"	"	" 29	1	" 30	" 5	Oct. 2.
Redstart.....	"	Rare.	" 30	1	May 1	" 6	Sept. 30.
Kingbird ¹	"	Common.	" 30	2	" 1	May 11	Oct. 6.
Black-and-White Creeper.....	T. V.	Rare.	" 30	1	" 1	" 6	May 1.
Bobolink ¹	S. R.	Common.	" 30	2	" 1	May 10	Oct. 8.
Orchard Oriole ¹	"	"	May 1	2	" 2	" 11	" 2.
Yellow-throated Vireo.....	"	"	" 1	1	" 2	" 12	Sept. 18.
Red-eyed Vireo.....	"	"	" 2	2	" 3	" 11	" 24.
Rose-breasted Grosbeak ¹	"	"	" 2	3	" 3	" 10	" 28.
Turkey Buzzard.....	"	Rare.	" 2	1	" 8	" 6	" 30.
Titlark.....	T. V.	"	" 2	4	" 8	" 6	May 2.
Lark Finch.....	S. R.	Common.	" 2	2	May 6	" 6	Sept. 15.
Great Crested Flycatcher.....	"	Rare.	" 2	1	" 3	May 17	Sept. 30.
Blue-Gray Gnatcatcher.....	"	"	" 3	1	" 4	" 6	" 22.
Yellow-rumped Warbler ^a	T. V.	Common.	" 3	5	" 4	May 6	May 9.
White-crowned Sparrow ^a	"	Rare.	" 3	4	" 4	" 6	" 8.
White-throated Sparrow ^a	"	Common.	" 3	1	" 4	" 6	" 8.
Blue Golden-winged Warbler.....	S. R.	"	" 3	2	" 4	" 6	Oct. 4.
Catbird ²	"	"	" 3	2	" 4	May 18	Sept. 18.
Scarlet Tanager.....	"	"	" 3	1	" 4	" 17	" 17.

OBSERVATIONS OF THE MIGRATIONS OF BIRDS AT WAUSEON, OHIO, IN 1895—CONCLUDED.

Name of Bird.	General Habits.	Is It Common or Rare?	When Was It First Seen?	About How Many Were Seen?	When Was It Next Seen?	When Did It Become Common?	When Was It Last Seen?
Chimney Swift ¹	S. R.	Common.	May 3.	2	May 4.	May 20.	Sept. 27.
Wood Thrush ¹	"	"	" 4.	3	" 5.	" 12.	" 27.
Indigo Bird ⁴	"	"	" 6.	4	" 7.	" 21.	" 25.
Wood Pewee	"	"	" 8.	2	" 9.	" 15.	Oct. 2.
Hummingbird ⁵	"	Rare.	" 6.	1	" 17.	May 25.	Sept. 18.
Wilson's Thrush	"	Common.	" 7.	1	" 17.	May 25.	Sept. 25.
Black-billed Cuckoo ⁵	"	Rare.	" 8.	1	" 16.	May 25.	" 28.
Yellow-billed Cuckoo ⁵	"	"	" 10.	1	" 21.	May 25.	" 28.
Night Hawk ⁶	"	"	" 14.	1	" 22.	May 25.	Oct. 2.
Least Flycatcher ⁶	"	"	" 17.	1	" 21.	May 25.	Sept. 30.
Purple Martin ⁶	"	"	" 17.	1	" 29.	May 25.	Sept. 27.
Black-throated Bunting ⁶	"	Common.	June 1.	2	June 2.	June 10.	" 25.
House Swallow ⁶	"	Rare.	" 19.	3	" 28.	June 10.	" 20.
Wild Geese	T. V.	"	Nov. 1.	2	" 28.	June 10.	Aug. 11.
				17	" 28.	June 10.	Nov. 1.

¹ S. R., means summer resident; W. V., winter visitant; T. V., transient visitant. ² a, means not seen in the fall of 1895; ³ b, not common at any time during the year; ⁴ c, rare in the fall; ⁵ d, a few remain all the year; ⁶ e, not seen again. ¹ Not so common as in other years; ² but few seen after the breeding season; ³ but few around in the fall; ⁴ scarce after about August 1st; ⁵ rare this year, though formerly common; ⁶ increasing in numbers.

OBSERVATIONS OF FRUIT TREES, ETC., AT WAUSEON, OHIO, IN 1895. THOS. MIKESELL, OBSERVER.

Kind.	Variety.	In Bud.	First Fully Formed Leaf.	In Full Leaf.	In Blossom.	Fruit Ripe.	Complete Change of Foliage.	Divested of Leaves.	Seeds Plentiful or Scant.
Apple	King.....	April 23	May 2	May 10	May 2	Sept. 30	Oct. 22	Nov. 5	Scant. Full.
"	Baldwin.....	" 23	" 3	" 11	" 6	Oct. 8	" 22	" 5	"
"	Greening.....	" 24	" 3	" 12	" 3	" 15	" 22	" 5	Scant.
"	Roxbury Russett.....	" 24	" 2	" 11	" 4	" 12	" 22	" 5	"
"	Swaar.....	" 24	" 2	" 10	" 3	" 10	" 30	" 10	"
"	Yellow Bellflower.....	" 22	" 2	" 9	" 2	July 22	" 30	" 10	Full.
"	Primate.....	" 23	" 3	" 10	" 4	Oct. 5	" 22	" 5	Scant.
"	Rambo.....	" 23	" 3	" 10	" 3	Oct. 29	" 30	" 10	Full.
"	Sweet Bough.....	May 2	" 6	" 13	" 6	Oct. 15	" 30	" 10	Scant.
"	Talman Sweet.....	" 4	" 8	" 15	" 7	" 12	" 22	" 2	Full.
"	Wild Crab.....	April 19	April 28	" 6	" 2	Aug. 15	" 11	Oct. 25	"
"	Siberian Crab.....	" 19	" 29	" 7	" 2	" 25	" 22	" 30	"
"	Flemish Beauty.....	" 23	May 2	" 11	" 1	" 25	" 11	" 28	Scant.
Pear	Bartlett.....	" 23	May 3	" 10	" 3	Sept. 1	" 22	" 30	Full.
"	Winter Nellis.....	" 23	" 2	" 8	" 1	Oct. 2	" 30	Nov. 5	"
Plum	Wild Red.....	" 24	" 3	" 12	April 30	Aug. 28	" 11	Oct. 22	Scant.
"	Wild Goose.....	" 27	" 4	" 14	May 1	" 25	" 22	Nov. 1	"
"	Blue Damsion.....	" 27	" 5	" 14	" 2	" 30	" 22	" 3	Full.
"	Seedling.....	" 20	" 3	" 11	" 2	Sept. 22	" 30	" 10	"
Peach	Early Sweet.....	" 20	April 29	" 6	April 29	June 15	" 22	" 5	"
Cherry	Early Richmond.....	" 24	May 3	" 12	May 1	" 20	" 22	" 2	"
"	Common Red.....	" 25	" 4	" 12	" 2	July 13	" 30	" 10	"
"	Wild Black.....	" 19	" 1	" 9	" 11	Aug. 28	" 22	" 3	"

OBSERVATIONS OF FRUIT TREES, ETC., AT WAUSEON, OHIO, IN 1895. — CONCLUDED.

Kind.	Variety.	In Bud.	First Fully Formed Leaf.	In Full Leaf.	In Blossom.	Fruit Ripe.	Complete Change of Foliage.	Divested of Leaves.	Seeds Plentiful or Scant.
Currant	Red.	April 11	April 20	April 30	May 9	June 30	Oct. 5	Oct. 18	Full.
"	Wild Black.	" 10	" 23	May 3	" 6	Aug. 1	" 10	" 20	" Scant.
Gooseberry	Garden.	" 8	" 20	April 29	" 10	June 29	" 8	" 20	" Full.
"	Wild Smooth.	" 10	" 22	" 30	" 14	July 14	" 10	" 22	"
"	Wild Swamp.	" 9	" 22	" 30	" 10	" 12	" 10	" 18	"
"	Common Wild.	" 8	" 21	" 30	" 12	" 10	" 8	" 18	"
Raspberry	Cuthbert	" 18	" 25	May 3	" 24	June 28	" 12	" 18	"
"	Wild Red.	" 16	" 22	May 1	" 20	June 25	" 22	" 28	Scant.
"	Wild Black.	" 18	" 24	" 3	" 22	" 27	" 22	" 28	Full.
"	Gregg	" 20	" 28	" 5	" 28	July 2	" 22	" 30	Scant.
Blackberry	Wild High	" 20	" 30	" 6	" 27	" 20	" 22	" 30	Full.
Dewberry	Wild	" 18	" 25	" 5	" 28	" 18	" 11	" 18	Scant.
Grape	Wild Frost.	" 30	" 6	" 28	June 3	Oct. 10	" 11	" 22	Full.
"	Concord.	May 1	" 9	" 30	" 5	Aug. 30	" 22	Nov. 1	Scant.
Strawberry	Wild.	"	"	"	May 1	June 4	"	"	"
"	Sharpless	"	"	"	"	"	"	"	Full.

OBSERVATIONS OF FIELD AND GARDEN CROPS AT WAUSEON, OHIO, IN 1895. THOS. MIKESELL, OBSERVER.

Kind	Variety.	When Planted	Above Ground.	In Blossom.	Ready for Use.	Ripe.	Per Cent. of a Good Crop.	Quality of Crop.
Wheat	Poole	{ Sept. 12, 1894.	Sept. 17, 1894.	June 3	June 28	June 28	90	Good.
Oats	Common White.	April 6	April 19	" 26	July 15	July 15	85	"
"	American Banner.	" 12	" 23	" 28	July 20	July 20	85	"
Corn, field	Queen of the North.	May 1	May 7	July 22	Aug. 22	Sept. 10	80	"
"	Pride of the North.	" 23	" 29	" 18	" 12	" 5	65	"
" sweet	Amber Cream.	" 28	June 2	Aug. 1	" 25	" 20	35	Fair.
" pop	"	" 28	" 4	" 5	"	"	Failure.	"
Potatoes	Early Vermont.	April 27	May 7	June 17	July 10	Aug. 20	60	Good.
"	Rural New Yorker, No. 2.	" 30	" 20	July 16	Aug. 15	Sept. 18	80	"
"	Green Mountain.	May 28	June 10	" 29	Aug. 30	" 25	40	Fair.
Peas	McLean's Little Gem.	April 27	May 7	June 12	June 24	July 15	30	"
Cabbage	Winnigstadt.	" 27	" 6	"	Sept. 20	"	40	Good.
"	Early Brunswick.	" 27	" 7	"	" 30	"	40	Fair.
Beans	Golden Wax.	" 27	" 6	June 18	July 10	" 25	80	Good.
"	Challenge Dwarf Black Wax.	" 27	" 5	" 20	" 12	July 25	20	Good.
"	Horticultural Lima.	" 27	" 9	July 15	Aug. 5	Aug. 20	30	"
Beet.	Early Egyptian.	" 27	" 5	"	" 5	"	40	Fair.
Radish	Long White Naples.	" 27	" 5	July 4	June 5	"	80	"
Tomato	Essex Hyorid.	" 27	" 6	" 29	"	Aug. 25	70	Good.
Sorghum	Minnesota Amber.	" 30	" 8	May 30	June 14	Sept. 5	80	"
Clover	Common Red.	"	"	June 18	July 5	Aug. 30	40	"
Timothy	Phleum Pratense.	"	"	"	"	"	50	"

NOTE.—The frosts in May cut early corn off three times, killing much of it. At the same time grass was frozen down to the ground. The extreme drought, also, affected most crops. Yet, with all these hindrances, crops were very good.

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CHART SHOWING

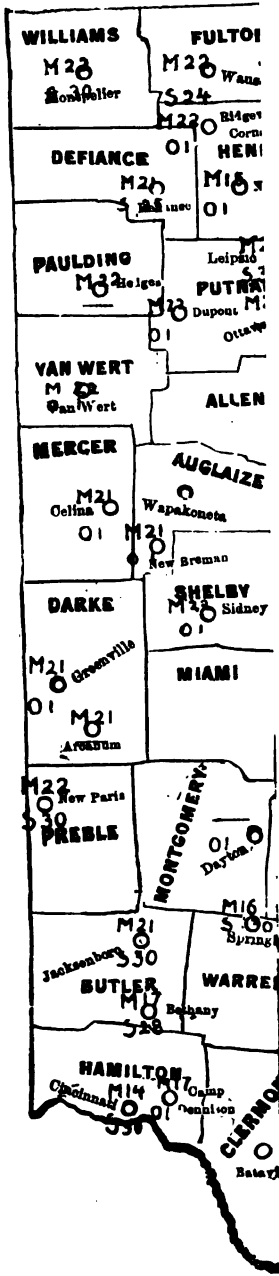


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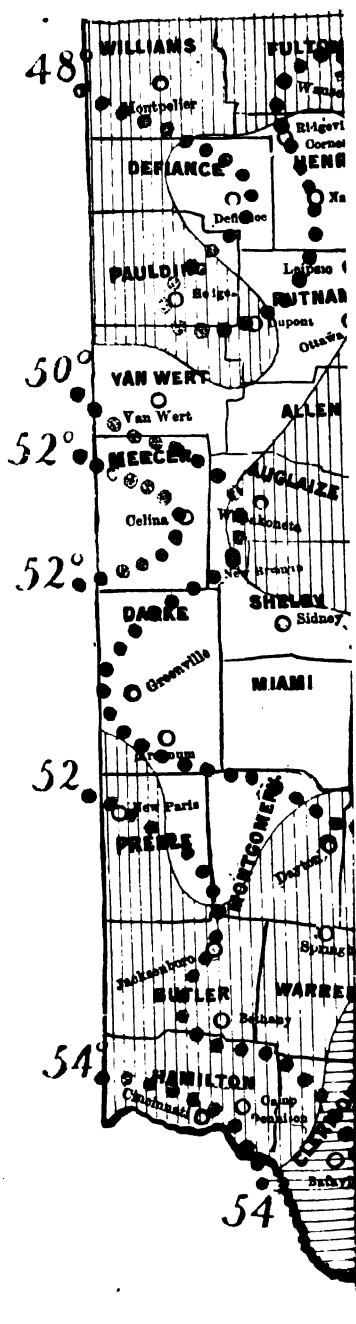
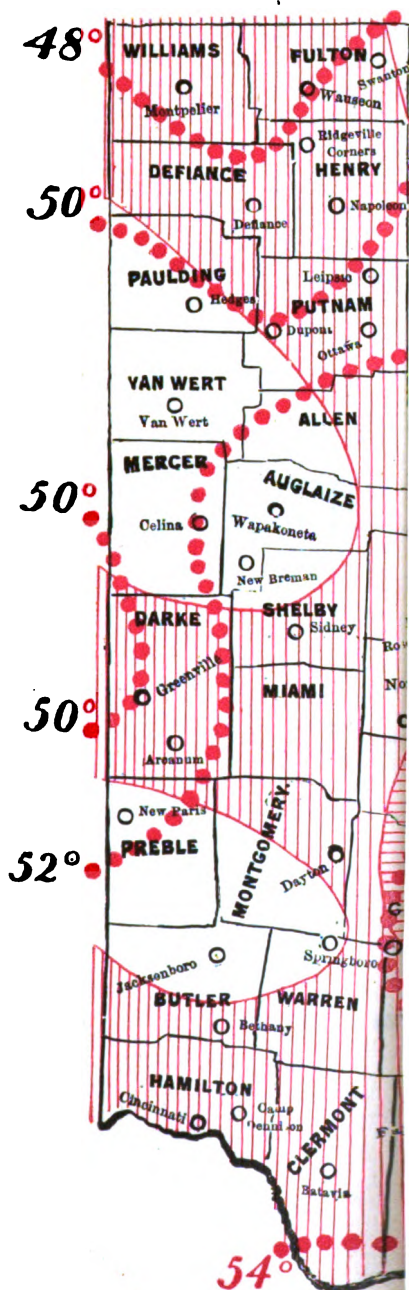


CHART SHOWING ANN



Twenty-Ninth Annual Report

OF THE

OHIO STATE

HORTICULTURAL SOCIETY,

For the Year 1895-6.

ORGANIZED IN 1847 AS OHIO POMOLOGICAL SOCIETY.

COLUMBUS, OHIO.
J. L. TRAUGER, STATE PRINTER.
1896.

OHIO STATE HORTICULURAL SOCIETY.

OFFICERS FOR 1896.

E. H. CUSHMAN, *President* Euclid, O.
W. R. LAZENBY, *Vice President* Columbus, O.
W. W. FARNSWORTH, *Secretary* Waterville, O.
N. OHMER, *Treasurer* Dayton, O.

AD INTERIM COMMITTEE.

First District—C. H. WAID Emery, Fulton County.
Second District—E. M. BUECHLY Greenville, Darke County.
Third District—F. G. WITHOFT Dayton, Montgomery County.
Fourth District—WM. MILLER Gypsum, Ottawa County.
Fifth District—W. N. SCARFF New Carlisle, Clarke County.
Sixth District—NELSON COX Ensee, Lawrence County.
Seventh District—E. M. WOODARD Kirtland, Lake County.
Eighth District—H. H. AULTFATHER Minerva, Stark County.
Ninth District—S. R. MOORE Zanesville, Muskingum County.
Tenth District—FRANK FORD Ravenna, Portage County.

STANDING COMMITTEES.

NOMENCLATURE.

GEO. W. TROWBRIDGE.....Crestvue, Hamilton County.
GEO. W. CAMPBELL.....Delaware, Delaware County.
N. OHMER.....Dayton, Montgomery County.
DANIEL DUER.....Millersburg, Holmes County.
W. J. GREEN.....Wooster, Wayne County.

ENTOMOLOGY.

PROF. F. M. WEBSTER.....Wooster, Wayne County.

FORESTRY.

PROF. W. R. LAZENBY.....Columbus, Franklin County.

VEGETABLE PATHOLOGY.

PROF. A. D. SELBY.....Wooster, Wayne County.

ORNITHOLOGY.

L. B. PIERCE.....Tallmadge, Summit County.

EXPERIMENT STATION.

GEO. W. CAMPBELL.....Delaware, Delaware County.
O. W. ALDRICH.....Columbus, Franklin County.
W. W. FARNSWORTH.....Waterville, Lucas County.

EXECUTIVE.

The President, Secretary, and

N. H. ALBAUGH.....Tadmor, Miami County.
O. W. ALDRICH.....Columbus, Franklin County.
N. OHMER.....Dayton, Montgomery County.

CONSTITUTION

OF THE

OHIO STATE HORTICULTURAL SOCIETY.

1st. This Society shall be known as the OHIO STATE HORTICULTURAL SOCIETY.

2d. Its object shall be to collect and disseminate information relative to fruits and other horticultural products, and to promote the taste for horticulture and rural embellishments among the people.

3d. Its officers shall be a President, Vice President, Secretary and Treasurer, who shall, in addition to their official duties, constitute a board, empowered to fill all official vacancies that may occur during the year by death or resignation. They shall be elected annually, by ballot, and hold their offices until their successors are elected; but the Secretary shall not enter upon the duties of his office until the first day of August following his election.

4th. The President shall preside, and conduct all meetings of the Society, and in his absence the Vice President shall perform the same duties.

5th. The Secretary shall record all doings of the Society, perform all correspondence, and, with the assistance of the President, collate and prepare the annual report, and other matters for the public press.

6th. The Treasurer shall collect and hold all funds of the Society, and pay out the same only on an order of the Secretary, countersigned by the President.

7th. The membership fee shall be one dollar per year, and any person may become a member of the Society by forwarding the fee to the Secretary or Treasurer. Each member shall be entitled to a copy of the annual report, when printed, and any other documents that may be printed for the use of the Society.

8th. There shall be an *Ad Interim* Committee, consisting of the officers of the Society and ten other members, residents of different sections of the state, to be elected annually, whose duty it shall be to observe and take notes of new and rare fruits, the fruit crops, and other matters of interest to the Society during the season, in their several sections of the state, and report the same at the annual meeting of the Society. This committee shall also hold meetings at such times and places as the President and Secretary may direct, for the inspection of fruits and fruit crops, attending horticultural exhibitions, etc., a report of the observations of the committee to be published annually with the transactions of the Society.

9th. The annual meeting of the Society shall open on the first Wednesday in December of each year at such place as may be designated by a vote of the Society, notice of the time and place, together with the order of exercises, to be sent in due time to each member, by the Secretary. At this meeting, the President will be expected to deliver an address, and the reports of the *Ad Interim* Commit-

tee, Secretary and Treasurer will be read and the usual business transacted, besides discussion on fruits and other topics.

10th. This constitution may be amended, and by-laws may be adopted for the government of the Society, by a vote of two-thirds of the members present at any regular meeting.

RESOLUTIONS.

The following resolution was adopted by the Society at its annual meeting, December, 1882:

Resolved, That the dues from each member of the Ohio State Horticultural Society shall be one dollar per year, payable annually in advance. Should any member become one year in arrears for dues, he shall be notified of that fact by the Secretary, when, if he does not pay to the proper officer such dues within six months after such notice, his name shall be stricken from the roll of members of the Society.

That the Secretary shall provide himself with two books, at the cost of the Society, in one of which he shall keep a record of all the names of the members, and in which he shall charge up to each member his annual dues. The other shall be a receipt book so arranged that the receipts therein shall show the time to which each member has paid his dues.

Resolution adopted at annual meeting, December, 1888.

Resolved, That in addition to the regular duties of the *Ad Interim* Committee, it shall be their special duty to solicit members for the State Horticultural Society.

Amendment adopted at annual meeting, December, 1892.

Amendment to Constitution:

There shall be an Executive Committee consisting of the President and Secretary and three other members of the Society, to be selected at each annual meeting, which committee shall have general charge of the affairs of the Society in the intervals of the meetings of the Society.

Amendment to Constitution adopted at annual meeting, December, 1894:

Section 9 of the Constitution shall be changed by striking out the word "second" and substituting the word "first."

STATE FAIR MEETING.

In place of the usual State Fair Meeting, the Society held a meeting in connection with the Columbus Horticultural Society at Wells Post Hall, Columbus, Sept. 5, 7:30 P. M.

Meeting called to order by President Cushman of the State Society.

Professor William R. Lazenby was appointed a committee to report upon the deaths of G. F. Newton and Dr. N. S. Townshend.

Dr. O. W. Aldrich moved that a committee be appointed to examine and report upon the samples of fruit brought in by members and others.

This motion received a second, and L. B. Pierce, Isaac Freeman and Nathan Moore were appointed by the chair as members of the committee.

Secretary Farnsworth spoke regarding the first winter meeting of the State Society and said he would like to have suggestions as to what topics should be discussed there. Several names were suggested as speakers whom the members desired to hear on different topics. Among those mentioned were Professor Bailey, Professor Garfield, the Pomologist at Washington, and some of his assistants.

Mr. Farnsworth said that since their special speakers for a few years had spoken mostly on large fruits, he thought it desirable to procure some one to discuss small fruits at the next meeting.

Professor Lazenby took the chair while President Cushman read his paper entitled "Fifty Years Progress in Horticulture."

President Cushman again took the chair, and after a short discussion of the paper just read, N. Ohmer of Dayton read a paper on "The History, Progress and Mission of County Horticultural Societies."

Dr. Aldrich presented a paper entitled "Our Newer Fruits Compared with the Old."

"The early Days of the Columbus Horticultural Society" was discussed by Col. G. S. Innis.

Professor W. R. Lazenby read the last paper of the evening. This paper was entitled "The Horticulture of the Future."

Mr. Gault then informed the State Society that he would pay all expenses if it would send one of its members to his farm to investigate and pronounce upon his new Gault's Improved Raspberry.

He was informed that the Society had adopted the plan of sending a member of the *Ad interim* Committee upon such missions. The Secre-

tary was instructed to notify the member of the above committee living nearest to Mr. Gault, and ask said member to visit the place where the raspberry originated, and write a report upon said fruit, to be presented to the Society at a future meeting.

The Committee on New Fruits then presented the following report:

REPORT OF COMMITTEE ON NEW FRUITS.

We beg leave, as a committee, to give our opinion regarding the samples of fruit presented for examination.

PLUMS.

We find, by the samples here, that the Poole's Pride is better than Miner. The Forest Rose is very good. The Prairie Flower is not equal to the Poole's Pride. Some other samples are not of sufficient size to encourage their cultivation. The Murdy, presented by the Albaugh Nursery Company, is very fine in appearance, large, red and of good quality.

PEARS.

We find the Ansault very nearly like the Louis Bonne De Jersey in quality. The Raymould, fair, but neither of them of sufficient size or quality to be recommended for cultivation.

GRAPES.

Your committee takes pleasure in reporting Campbell's Early as one of the finest in quality we have ever tasted. It gives every promise of being a good shipper. The bunches are of good size and very attractive in appearance.

APPLES.

The plate of apples presented by Mathias King are of fine quality and fair size. Their appearance is similar to Prolific Beauty. The apples presented by Aaron Riley of Muskingum County are very large and have a fine appearance. They are, no doubt, of a local variety not disseminated.

RASPBERRIES.

A sample of tips of the Gault's Improved Raspberry, full of fruit, has been presented. These are of the everbearing type and, to the committee, seem to have sufficient promise to recommend their further test.

PEACHES.

Mr. Daniel Duer of Millersburg, Holmes County, presents a large, white, seedling cling, which in quality is not good enough to be recommended for cultivation.

Respectfully submitted,

ISAAC FREEMAN,
NATHAN MOORE,
L. B. PIERCE.

This report was adopted by the Society and ordered printed.

The meeting was then declared adjourned, and, after a short interval spent in a social way, each one took his departure feeling that the evening had been pleasantly and profitably spent.

FIFTY YEARS PROGRESS IN HORTICULTURE.

BY E. H. CUSHMAN.

Gentlemen and Ladies, Ladies and Gentlemen:

At first thought it would seem that we might say that all we have of Horticulture to-day has developed within the last half century, but such is not the case, for in the year 1845, the beginning of the period we have under consideration, we find a class of men interested in the garden who were full of enthusiasm for the art, then, just indicating the great promises which fifty years have fulfilled.

It was then that A. J. Downing first gave to the world that standard horticultural work which is our best authority to-day, *Fruits and Fruit Trees of America*. He was also publishing at that time at Albany the *Horticulturist*, this with the *Magazine of Horticulture*, published by that old pioneer, C. M. Hovey, of Boston, and the *Ohio Cultivator*, by M. B. Bateham at Columbus, and perhaps one or two other publications formed the Horticultural press of fifty years ago.

Other gentlemen active and prominent in the work at that time were Marshall P. Wilder, P. Barry, Ives, Manning, Charles Downing, Wm. R. Prince and the Parsons.

Our own state had its Longworth, Kirtland, F. R. Elliott, A. H. Ernst, Dr. Warder, M. B. Bateham, G. W. Campbell, J. Burr, and many others worthy of mention in this connection. These men were all active in comparing notes, methods, varieties, etc., experimenting, crossing and hybridizing. Many of them were gentlemen of means who spared no expense in carrying out their experiments and in procuring new, rare and choice varieties of fruits and flowers. These gentlemen having a common interest in plant life were naturally drawn together, and they found that by interchange of thought there was much benefit derived; as a result we find when we take up this subject that the city on the Ohio and the one on Lake Erie both had active Horticultural Societies, and it naturally followed that exhibitions made up of the best products of their gardens were a drawing feature in their organizations and helped to create a love and desire to possess and develop the best that could be produced.

This event which we celebrate to-day was made possible by the issuing on April 1st, 1845, a call for a public meeting on April 10th. At the meeting of April 10th it was resolved to organize, and on May 12th, 1845, the Columbus Horticultural Society was launched with a full set of officers. Bela Latham being chosen President, and J. W. Andrews, Treasurer; Joseph Sullivan, Recording-Secretary; M. B. Bateham, Corresponding Secretary. Early in its history the Columbus society held very successful exhibitions. Other local societies were organized about this time, the tracing of which it is not possible for me to do.

To the best of my knowledge there were but four state Horticultural Societies in existence in 1845, Massachusetts, Maine, New York and Pennsylvania. At this time there were no national organizations.

Several national fruit conventions were held in prominent cities of the East prior to 1852. At a fruit growers' congress held at Philadelphia, in that year the American Pomological Society was organized on the 13th of September.

On the 31st of August of the same year the Ohio Pomological Society was organized at Columbus. Membership enrolled at that meeting thirty-seven with over half of them from Cincinnati.

It is not possible for me to trace step by step the development of the different fruits. I can only give points that I have been able to obtain from various sources. The strawberry being the first fruit of the season and perhaps used in

larger quantities in its fresh state than any other berry fruit, should receive our first attention. It has reached a greater degree of development in a half century than any other fruit, of the 250 varieties of berries classified and described by Downing in his first edition, only four of them are within my memory and experience, viz.: Hovey, Wilson, Jucunda and Triumph De Gand has been dropped from the catalogues and cultivation. Only a few grow the Jucunda and Wilson. How much better our Bubachs, Marshalls, Greenvilles and all the favorites of to-day are over those of fifty years ago, I am not able to state. That there is much progress being made will go undisputed. The Jucunda, where it could be successfully grown was a star of the first magnitude, especially was this true in points of size and beauty. Wilson's Albany for many years held first place as a market variety. The advent of the Sharpless and Cumberland Triumph marked a new era in the growing of large strawberries for market, closely following them we have an array of varieties the like of which the horticulturist of fifty years ago never dreamed.

Methods of cultivation are not changed much as far as the growing for the general market is concerned. Knox of Pittsburg grew potted plants for sale in the early sixties and the practice is continued where summer planting is done.

The rooting of runner tips in pots and frames protected from the hot sun is probably the most recent development in the strawberry plant trade.

I give the following clipping from the *Ohio Cultivator* of August 1st, 1845, showing how the crop was marketed and prices obtained in Cincinnati the previous June:

"I examined the strawberry stands at Lower Market street, last Saturday, and found one hundred and sixteen cases, averaging thirty-five boxes of one quart each to the case, being a total of four thousand and sixty quarts. The quantity offered at Canal Market and at various stands through the city, would easily increase the aggregate to five thousand quarts. These are sold at present from five to six cents per quart, according to quality, the price of the article averaging three cents throughout their entire period of sale.

"A four-horse wagon drove up on Friday last to Fifth street Market with *two tons of strawberries!*

"Most of this delicious fruit is cultivated in adjacent Kentucky, where patches of five to ten acres are frequent. Two of the strawberry gardens are eighteen and twenty acres and one of them reaches to thirty acres in extent, there being at least 140 acres devoted to the culture of this article!"

Strawberries in Cincinnati markets for the season of 1847.

"*Strawberries in the Cincinnati Markets.*—The quantity of strawberries sold daily in the markets of the Queen City exceeds all precedent. A committee appointed for that purpose by the Horticultural Society has ascertained the quantity brought to market each day, and will make a report at the close of the season. The three best days are put down at 489, 514, 411 bushels."

The following description of the largest strawberry of the day is worthy of notice. Taken from *Ohio Cultivator* for 1847:

BURR'S OHIO MAMMOTH STRAWBERRY.

"As was stated in our last, the '*Ohio Mammoth*,' is believed to be the *largest* strawberry known in the average size of the berries, although occasional specimens of Hovey's Seedling have been known to equal it. On strong clayey, rich soil, with plenty of space, very many of the berries will measure *four* inches or over in circumference—some have measured $4\frac{1}{2}$ to $4\frac{1}{2}$ inches. The color of the fruit is a pale red—hence it is not as handsome as some others; form conical, and slightly grooved or angular, as shown by the shading in the engraving; flavor sweet and good. The plants are of vigorous growth, quite hardy, and very productive for so large berries.

The blossoms being staminate (perfect) this variety bears well when planted alone, and is valuable for growing along side of pistillate kinds to increase their productiveness."

The following advertisement taken from the *Cultivator* will show what the prices for trawberry plants were at that time, not so very different from those of to-day:

STRAWBERRY PLANTS.

Plants of the following choice varieties can now be furnished at the prices annexed:

Large Early Scarlet, Burr's (old) Seedling, Hovey's Seedling and Hudson, 50 cents per dozen, \$2 per hundred.

Swainstone's Seedling, Columbus, Rival, Hudson and Profusion, 75 cents per dozen, \$3 per hundred.

Scioto, Scarlet Melting, New Pine and Ohio Mammoth, \$1 per dozen, \$5 per hundred.

Late Prolific, \$3 per dozen.

The following varieties of some note have been received, and are under cultivation, but not sufficiently proven to test their merits:

Eberlin's Seedling, Taylor's Seedling, Jenny's Seedling, Willey, Neck'd Pine, Boston Pine, Black Prince and some others.

The following eight kinds have been cultivated and rejected by me, as of little value compared with the first 13 varieties:

Bayne's Extra Early, Methven, Ross Phoenix, Bishop's Orange, Downton, Myatt's Eliza, Stoddard's Red and White Alpine.

I have no hesitation in placing six of my new varieties before all others that have been tried and proved here, for size, quality, great productiveness, vigorous and hardy character, they excel all others.

JOHN BURR.

Columbus, July 15, 1848.

The raspberry succeeding the strawberry as it naturally does, we give it a passing notice. Downing mentions eighty-seven varieties, this covers all the reds, yellows and blacks. Among them I find the Doolittle, black, a variety that was in general cultivation twenty-five years ago, and as good as any ever introduced, as I remember it. It succeeded on all soils, was prolific and sweet. The Gregg, for black where it succeeds is an improvement, this, and the Cuthbert, for red marked a period in raspberry culture which has a decided advance over anything previously obtained.

The blackberry in early days was not under as general cultivation as to-day, and there being plenty of wild berries less attention was given them. As the country is cleared up and towns and cities grow, the cultivated varieties come into demand. We find that there are some twenty-five varieties named in the year 1845, two of which for years were the standards for productiveness and quality, the Lawton and Kittatiny, both of these varieties were wildlings taken from the roadside and mountain, and developed under cultivation, neither could stand extreme cold and both had nearly succumbed to the rust. The Snyder, a later introduction, owing to its extreme hardiness and productiveness, has the lead as a market variety.

If I were to enumerate the varieties of berries that are claiming first rank with a short description, I would only be repeating what you already can find in any nurseryman's catalogue.

The same is true as to tree fruits. The advancement to-day over fifty years ago is more in extent of planting and marketing than in varieties. Nearly all the varieties of apples, pears and plums which are of value to-day, were in existence and

being tried in 1845. The horticulturists of that day were tasting, identifying, and classifying varieties then as now. This work must ever go on, hence the value of our horticultural organizations and exhibitions.

I am not going to say that the development of varieties in apples, pears and plums are greatly in advance of the varieties cultivated by Wilder, Kirtland, Hovey, Hoadly and others.

True, we have selected some of the best and discarded many inferior ones. Have had some new varieties forced upon us by enterprising nurserymen, which have brought large profits to a few, and wry faces to the many who have tried to eat them. Now we are entering a new cycle of variety production which I hope will be an improvement in quality. We have enough of quantity to-day. What we should aim to do is to develop varieties which will be so delicious when eaten that the consumer cannot get enough of fruit. We will not then need to fear a glut in the markets; quality to back up its productiveness and shipping qualities should receive the commendation of all intelligent horticulturists and their organizations.

What shall we say of the grape, a fruit once so rare and a luxury, now so common that for a twenty-five cent piece a basket can be purchased in any market town in our state.

Indeed it can be said of this and all fruits, fifty years ago they were luxuries, to-day they are necessities, and commercial horticulture and its developments have made them so.

When Mr. Longworth and his German vintners were carrying on the culture of the grape on ground long since occupied by the City of Cincinnati, they little dreamed that their primitive operations would be eclipsed by the wonderful development of the industry along the shore of Lake Erie. And again we can say that the development cannot be attributed to the recent introduction of new and valuable varieties.

What were the varieties of merit in those days? The Catawba and Isabella, and they grew fine ones, the records give accounts of 1½ lb bunches being of frequent occurrence. I doubt if it is possible to find a bunch of any variety on the exhibition tables of our fair to-day which will reach that weight, and if not there where are they to be found? In the early part of the half century came those two varieties of grapes the Concord and Delaware which have done more to make commercial horticulture than any varieties introduced before or since, the Niagara and other standard kinds notwithstanding.

Just how or why the Concord grape has attained the position it has is one of those occurrences in human affairs that is unaccountable. Certain it is, it holds a place among grapes not equaled by any other variety of fruit in its class.

Planters have watched eagerly for something better to take the place of the varieties named above, and in each new candidate have been disappointed until now they look at new introductions with a distrust and even ridicule.

I have faith that it is possible to improve on them, I hope that such improved varieties are in sight, but fifty years more perhaps may be necessary to effectually demonstrate their desirability.

I fancy I hear some one say what about the peach? Ah well! Fifty years ago they grew something in that line that we seldom see in Ohio to-day. Don't you remember those peaches our fathers tell about, trees forty feet high (more or less) with peaches twice the size of your fist, and so plentiful that they were not worth marketing.

If we could search the records of the Columbus Society we would find where in September 1847, were exhibited specimens of the Vandemark Seedling (from seed of the Lemon Cling), a remarkably handsome fruit, deep yellow flesh, fine red

outside, measured *over a foot* in circumference! One weighed fourteen ounces, and four together weighed two pounds and fourteen ounces. Several very fine seedlings were also exhibited by Mr. Sites, also by Mr. Burr, and by Mr. Lazell.

In 1843 Wm. Van Horne showed peaches twelve inches in circumference, and thirty-six filled a half bushel basket. Peaches sold at that time for \$1 to \$1.50 per bushel in Cincinnati markets.

To show the kind of stories in circulation as to the profits in fruit growing I will read the following taken from the *Horticulturist* of 1848:

PROFITS OF FRUIT CULTURE.

From the Horticulturist.

Having seen in a late number of the *Horticulturist*, an account of a cherry tree that produced ten dollars worth of fruit in one season, permit to give a chapter of facts on fruits, most of which are within my own personal knowledge.

Mr. E. Cable, of Cleveland, O., has an orchard of a hundred cherry trees, now 22 years old. In the year 1845, his crop sold for upwards of one thousand dollars. Mr. C. manages his orchard better than any other person in the Union, so far as my knowledge extends. The trees are planted out twenty-five feet apart, the ground kept properly enriched and cultivated, but no crop is put in.

Elisha Swain, of Darby, near Philadelphia, has the remains of a cherry orchard, numbering seventy trees, mostly of the Mayduke variety. In the height of the season, his sales amount to upward of eighty dollars per day. Mr. S. to insure a good crop every season, digs in a horse-cart load of manure to each tree in autumn.

Hill Pennell, of Darby, has twenty apple trees, of the Early Redstreak and Early Queen varieties, that stand on half an acre of ground. In 1846 these trees produced three hundred bushels of fruit that sold in Philadelphia market for 75 cents per bushel, or two hundred and twenty-five dollars for the crop.

Mr. Pennell has a grape vine of the Raccoon (Fox grape) variety, that covers the tops of fourteen apple trees. It has never been pruned, but produces seventy-five bushels of grapes yearly, that sell for one dollar per bushel. The apple trees produce good crops of fruit, and under the trees is produced a crop of grass; thus making three crops from one lot of ground.

James Laws, of Philadelphia, has a Washington plum tree that produces six bushels of fruit yearly, that would sell in market for ten dollars per bushel. Five of the above plums weigh a pound.

Mr. Laws has a fine vineyard of Isabella and Catawba grapes, near Chester, sixteen miles below Philadelphia, three-eighths of an acre of which came into bearing in 1845. The sales amounted to three hundred dollars at eight cents per pound, or at the rate of eight hundred dollars per acre from vines only four years old.

Brinton Darlington, of West Chester, Pa., has a Catawba grape vine that produces ten bushels of grapes yearly. This crop is worth forty dollars market price.

Jacob Steinmentz, of Philadelphia, has a Blue Gage plum tree that produces ten bushels of fruit in a season, worth in market, thirty dollars.

My friend, Elwood Harvey, Chaddsford, Pa., the present season, gathered thirteen quarts of gooseberries from one plant.

A gardener near Philadelphia has two rows of gooseberry plants, one hundred and fifty feet long. One afternoon he gathered with his own hands, six bushels of fruit, and the next morning sold them in Philadelphia market for twenty-four dollars.

A gentleman of Philadelphia having two apricot trees, that produced more

fruit than his family could consume, concluded to send the balance to market and expend the money it would bring in purchasing wood for the poor.

Judge Line, of Carlisle, Pa., has had two Syrian apricot trees that have produced five bushels to each tree in a season. In the Philadelphia market they would have commanded one hundred and twenty dollars, in the New York market one hundred and forty dollars.

Hugh Hatch, of Camden, N. J., has four Tewksbury Winter Blush apple trees that in 1846 produced one hundred and forty market baskets of apples. Without any extra care, ninety baskets of these were on hand late in the spring of 1847, when they readily sold at one dollar per basket.

The following facts relative to fruits growing near the North river, I have never seen published: Three years ago Mr. Chas. Downing, of Newburgh, N. Y., informed that a fruit grower of his acquaintance in Fiskhill Landing, N. Y., had gathered fifteen barrels of Lady apples from one tree, and sold them in New York for forty-five dollars. The same gentleman you speak of in your *Fruits and Fruit Trees of America*, as having sent to New York sixteen hundred bushels of plums in one season, has sent to New York apricots, and received fourteen dollars per bushel for them. The above gentleman has often said that his plum trees, which are set out about the buildings, and take up but little room, pay him more profit than the whole of his valuable farm of two hundred acres. Another fruit grower in your neighborhood has sent four hundred bushels of Frost Gage plums to market in one season, and received twelve hundred dollars for them.

Yet with all these facts before us, there is no full supply of any kind of fruit in the Philadelphia market, except peaches. Many farmers and gardeners neglect setting out fruit trees from a natural negligence; others dislike to pay fifty cents for a fine plum tree; others again are afraid that everybody will go to fruit growing, and bring down the price to almost nothing. But we would ask, if there is any more danger of everybody commencing on a large scale the culture of fruit than there is that everybody will commence the raising of onions, or the making of razor strops, or the cultivation of roses?

B. G. BOSWELL.

Philadelphia, Pa.

A RICH LITTLE FRUIT FARM.—On the banks of the Ohio, ten miles above Cincinnati, Mr. Joseph Clark has a farm of five acres on which he cultivates 112 kinds of peaches, seventyfive of which are in bearing, some of the most vigorous of the trees having not less than nine or ten bushels on each. His experiment is a new one, and this season he has had an abundant supply ripening in succession since the 15th of July. On this small piece of ground Mr. Clark has also 83 varieties of plums, 33 of which are in bearing, 115 varieties of pears, 112 of apples, 60 of cherries, 15 of nectarines, 12 of apricots, 4 of figs, 30 of grapes, 4 of strawberries, including the new Falstaff variety. Mr. Clark has effected all this in about four years.—*Cultivator*.

September 16, 1848.

I will let the gentlemen present tell the whoppers for the year 1895.

Taking horticulture as a whole it has not developed so much in improved varieties as it has in acreage and methods of cultivation and distribution. The country has been covered with the telegraph and railroad in the time we have under consideration, and commercial horticulture has grown as they have grown. Season and locality will soon be of little consequence as far as fruit is concerned. The electric wire operates the electric motor, and if not, steam cars will bring our fruit garden to the door of every one who desires our products.

These large developments have called for better tools and to-day we can equip our establishments with implements whereby one man can raise in a season

what it would have taken a dozen men to do a few years ago. A person fifty years ago who would have ventured to predict that we would now be riding the plow, cultivator, planter and harvester, would have been the object of ridicule, and termed a crank.

The natural sciences have organized for our benefit, and supported by the state they are enabled to help the willing cultivator to combat the bug, the blight, the blasting frost, the blighting drouth, a poor soil and a poor pocket-book.

Take away all that pertains to the horticulturist's art and you will have only form and frame work. Horticulture is nature's finish, put on and tuned to the wonderful harmonies which pulsate throughout the universe, ever leading her votaries on to greater possibilities and attainments.

THE HISTORY, PROGRESS AND MISSION OF COUNTY HORTICULTURAL SOCIETIES.

BY N. OHMER, OF DAYTON.

Mr. President: I am expected to-day to address you on the "Progress and Mission of County Horticultural Societies." To do so I think it best first to give you the history of the Montgomery Society, one of the oldest and I think one that has done much good in our county, and I think, throughout the state.

Twenty-eight years ago, I, being then up to my eyes in fruit growing, conceived the idea that it would be a good thing to have a Horticultural Society in our county. I took the responsibility upon myself to call a meeting at the Phillips House, of all such as were interested in horticulture. About a dozen gentlemen attended this meeting; after discussing the matter for which we had met, the meeting adjourned to meet a couple of weeks hence in the city hall, for the purpose of organizing.

At this second meeting an organization was effected by the adoption of a constitution and by-laws, and the election of its officers.

The society has met once per month from then to date, rain or shine, hot or cold, we have never missed having a meeting, and a good one at that.

The first two years the meetings were attended by men only, generally from twenty to thirty. In time it dwindled down to a less number, in fact, it looked as if this third effort would end as its two predecessors had ended, played out.

Some one conceived the idea of changing our constitution so that a membership would constitute the wife, as well as the husband. Invite the ladies to attend our meetings, and participate in its proceedings, and in addition to that, have a picnic, or basket dinner, at all meetings. This had a wonderful effect to give life to the society. We then and now, meet at the homes of members, never in a hall, nor twice in the same place the same year, our society owns its own dishes, knives, forks, and a big coffee pot which are taken from place to place as needed. Dinner takes place at about half past twelve, meeting organized soon after dinner, usually lasting two to three hours, we never go to a meeting but feel that the day was well spent. We have a regular order of business, discussions and essays.

At first members were elected by ballot, we have long since done away with that, any one can become a member by the payment of one dollar per year. No danger any one becoming a member who is not worthy. If they do, they attend but few meetings, they are out of their element.

Our society has printed its proceedings, which are bound in pamphlet form at the end of each year. This has been done since 1870.

Now, as for the influence of good in a community, no society has done more to benefit the fruit, flower and vegetable growers in our county, and cultivate a good taste in our city in planting trees, flowers, and especially in encouraging city people to take down their front division fences. I know of no city where can be seen more nice homes, lawns and flowers, than in what is called the Gem City. I have heard many strangers say that Dayton is the prettiest city in the Union. Our society claims, and is accorded much for its good influence, especially in its early days, when most needed.

What has been done by the Montgomery County Horticultural Society, is being done by similar societies in the state, notably, the Lucas County, Warren County, Miami County, Summit County, Portage County, Muskingum County, and others that I might name, all are doing a good work in a good cause.

Some of these Horticultural Societies were organized through the influence of the State Society, usually following a meeting of the State Society in the county. The best efforts of the State Society should be continued in that line, until there is a Horticultural Society in most counties of the state.

THE EARLY DAYS OF THE COLUMBUS HORTICULTURAL SOCIETY.

BY G. S. INNIS.

Mr. President: Receiving a circular from our worthy secretary with the following item in it: "The Early Days of the Columbus Horticultural Society" brought to my mind many sad thoughts, when I tried to remember even the names of those good men who organized the society, for the improvement of Horticulture in Columbus and its vicinity. Of course they felt almost or quite as much interest in the surrounding country as they did in the city itself, for they well knew, their families and friends must depend on the country for their daily supplies of horticultural products. One of the oldest members was Mr. Francis Stewart, who owned a farm where the city park is now located. He planted an extensive orchard on the west side of High street, and was about the first man in the country to improve the apple. He had his trees grafted or budded with the best varieties of apples known in the United States. Being a merchant, he had a good opportunity to procure his scions when in the East purchasing goods.

Mr. Joel Buttles, another merchant owning a farm in Hamilton Township, was a close companion with Mr. Stewart in improving the apple. He afterwards sold his farm to Mr. Thomas Wright, and the orchard, planted by Mr. Buttles, became early distinguished for producing the finest and best quality of apples. Mr. Robert C. Henderson was another of these men, but he also included a few other fruits. Then there was William Merion, the first settler on the Merion farm on South High street; who, together with his son William, who lived just east of him and was an early active member of our society, did their full share in improving the tree fruits about Columbus.

Then the liberality of Bela Latham, Jas. Sullivan, M. B. Bateham is to be highly commended as well as imitated. They gave their neighbors and even strangers scions, off their trees, without money and without price, for the purpose of improving the fruits of the county.

Mr. Thomas McColley of Mifflin Township was the first to improve the peach and he did it well. I remember well of sampling his peaches in the days of my youth and thought them the best things I had ever tasted. His trees being well cared for, young and vigorous, produced the nicest specimens of their kind to be

found anywhere. I well remember of seeing him with some twenty bushels of these fine peaches, in a two-horse wagon and common lumber bed, and only straw in its bottom to prevent the peaches from being bruised, backed up in the Columbus market.

The citizens of the city flocked around his wagon as thick as bees, took his measures, filled them, each for himself, and paid him at the rate of four dollars per bushel and his load was all gone in thirty minutes. There was another man, intelligent appearing, who had a larger load of peaches in the market at the same time and was trying to sell at thirty cents per bushel; declaring they were the best peaches ever produced in Franklin County. This man, however, needed to be labored with by some of the members of our horticultural society. Then there was Dr. I. G. Jones, than whom we had no more valuable member, intelligent and earnest in his work. Our society suffered a heavy loss when death claimed him for its own.

And Adam Sites was a very valuable man to the society, a worker, a hustler, but he found an early grave.

Then there was Benjamin Blake, another worker in the interest of horticulture. Lucien Butties should not be forgotten by our members; he was active and efficient up to the time of his entering the army to help put down the rebellion.

James M. Westwater, our late president, was one of our early members, always efficient and abounding in good work, for the advancement of horticulture, for the improvement of others as well as himself.

Then we had Henry C. Noble, who was ever devoted to our welfare. Our counsel in time of need, active and always ready to help. There were many others, but little less prominent workers in horticulture than those named above, who in common with them have gone over the dark river.

Of the old members now living, our worthy president holds a conspicuous place. No one has been more constant in attendance than John J. Janney, and he does not weary in well doing. As a rule we could always count on President Janney being in attendance at our meetings, and there was no one more industrious than he for the welfare of the society.

Another old member now living is Mr. W. G. Deshler. To say that he has been faithful in his work for the Columbus Horticultural Society, is putting it very mildly. I remember very well when the board of officers concluded to suspend operations on account of the disturbed conditions of this country, brought about by the war of the Rebellion, that we said to Mr. Deshler, then our treasurer, take this money, about two thousand dollars, invest it as you would your own until the country becomes at peace again, so we can resume operations as a society. He did as requested, and when the society again became active he reported that we had forty-five hundred dollars in the treasury. The old members were astonished and asked for explanations. Mr. Deshler replied: "When I saw an extra good chance to make some money I invested the society's funds instead of my own and have kept on doing so with the result before you." All honor to our former treasurer. No one could have been more generous and but few could have brought about as favorable a result, had they been ever so anxious so to do.

But the question may be asked, "What good results have been brought about for the public generally from the labor of these men, as members of the Columbus Horticultural Society?"

When this society came into existence the apples were native seedlings, but little better than the wild crab apple. In from ten to twenty years our markets were supplied with as fine apples as the world has produced. The same is true of peaches, grapes and other tree fruits. Then the small fruits have been introduced, the blackberry, raspberry and the luscious strawberry.

In vegetables we used to have the yellow-fleshed muskmellon. The water-

melon with a core about as hard as the rind. Now we have watermelons when we can get them fresh from the vines, which are almost faultless. We have also Skillman's Fine Netted melon, and other green-fleshed varieties which are so much better, that any person after eating of them would at once reject the old varieties of our grandfathers.

Then in floriculture the women of our households, our wives, sisters and daughters have been largely benefitted, as well as conferring larger benefits on each individual member. Who can pass a house with the yard well filled with beautiful flowers without feeling his heart warm up towards the inmates of such a home, let it be ever so humble? It bespeaks culture of the best passions of human nature.

Then the society has been of the most benefit to the members themselves. Made us better acquainted, more social, more refined and better friends. Who would sell for money the remembrance of our old time friends of the horticultural society or part with the love we bear to the memories of those that knew us best some fifty years ago? We can now but hope that younger men of the present day will keep up the usefulness of this society and be able to hand it over to their sons and their companions greatly enlarged and much improved for future usefulness.

PROCEEDINGS
OF THE
TWENTY-NINTH ANNUAL MEETING
OF THE
OHIO STATE HORTICULTURAL SOCIETY
HELD AT
CANTON, OHIO,
DECEMBER 4th and 5th 1895.

The twenty-ninth annual meeting of the Ohio State Horticultural Society was called to order at the Assembly room in the City Hall of Canton, Ohio, at 10 o'clock A. M., December 4th, 1895, with President E. H. Cushman, of Euclid, Ohio, in the chair.

President Cushman said: Gentlemen, the time for opening the twenty-ninth annual session of the Ohio State Horticultural Society has arrived, and I am sure it is a pleasure for us to gather here this morning, once more, in the pleasant duties we have before us, and we hope that this will be the most profitable session that this society has ever held. And from indications I think we will probably enjoy such a meeting.

The first duties that fall upon me this morning, according to our program, is the appointment of various committees. I have selected two of the most important committees for the present, and will name them as follows: Committee on Business, for the arranging of the program from session to session, as it seems best, Professor William R. Lazenby, E. M. Woodard and W. N. Scarff. Committee on Horticultural Exhibit, Hon. N. H. Albaugh, Mr. Albert Hale and Mr. S. R. Moore. The Committee on Membership I will announce a little later, as I have not had an opportunity to consult as to who would be the best to put on that committee.

The President: I will call first upon Mr. William Miller from Gypsum, Ohio, who is first on the program.

AD INTERIM REPORT OF WM. MILLER FOR OTTAWA COUNTY

The fruit crops of Ottawa County for 1895—save that of strawberries—were better than the average in both quality and quantity. From blights and frosts, insects and diseases the damage was below the average. We judge of the success of the harvest by observing more new homes built and old ones bettered, more mortgages lifted and debts reduced than in any one year for a decade.

A large apple crop was grown and a moderate crop harvested, the codling moth ruining fully one-third of the crop. This insect seems to flourish upon the homeopathic doses of Paris Green recommended for his extermination. It is only when the crop is very abundant that our section has apples enough for the home market. If other counties do no better in apple culture the demand must soon exceed the supply.

Of late years the pear crop has been much more reliable than that of the apple. The diseases and insects preying upon this fruit seem to be more easily controlled by the use of the sprayer than upon other fruits.

The interest in plum growing shows no abatement, and large orchards are still being planted. Unless some method can be devised to increase the consumption there is great danger of an over-production of this fruit in the near future. The crop this year was a fair one and less troubled by curculios than for many years. This insect seemed active and abundant until the May frost, after which but few were found. Did the frost kill him? In the early spring much alarm was felt because of the abundance of the plum scale, as described by Prof. Slingerland, of the New York station, as doing much harm in western New York. Efforts were made in one of the large orchards to destroy the scale with kerosene emulsion, but without much success. At the bidding of Prof. Webster, or from some other cause, and to the great delight of plum growers, they were attacked by parasites and entirely killed, not leaving enough of their kind to perpetuate the race. Would that the professor might discover enemies for the curculio and codlin moth who would do as good service.

The grape industry—to employ a useful term invented at the White House—may be said to be in a state of "Innocuous Desuetude." The crop this year was fair, but prices were very unsatisfactory. Peach trees continue to be planted in the alternate rows of many vineyards. In one year after planting the row of grapes occupied by the trees is removed. Two years later a full-fledged peach orchard occupies the site of the vineyard.

All other fruit crops in our locality are of small importance compared with the peach crop. Of this the crop was no larger than last year, but because of so many young orchards coming into bearing, the aggregate production was much greater than ever before. The crop of the country at large was much greater—probably double—what it was last year, but throughout the season the market was more active and the average of prices better than at that time. The regular daily march of the dinner-bucket brigade from factory to home is the greatest factor in making an active market.

The failure of the crop in the Ohio valley and eastern Ohio gave a good territory in which to market fruit. Cleveland absorbed more than any other city. Cincinnati and Columbus also used large quantities. In the way of varieties, we have several of local reputation which are very superior peaches. Some of them no doubt are known in other localities by other names. Peach nomenclature seems to be very badly tangled. Too much so for individual growers to straighten. The state ought to undertake this work at once.

The Elberta sustains the good name it has brought from the South. This year's experience with it confirms the report that it is the best all-round peach

cultivated. Its introduction marks an era in peach growing as great as did the introduction of the Concord or the Baldwin for the grape and the apple.

The earlier plantings in our locality were all of late varieties, the planters reasoning that such varieties would not ripen until fruit from competing localities were out of the market, and better prices realized. But planting late varieties seems to have been overdone, and of late years the growers aim to have a succession throughout the whole season.

We note many improvements in methods of culture, implements and general care of orchards. The tendency of the best growers is toward a longer season of cultivation beginning earlier and continuing until the fruit is about ready to harvest. We have been told that cultivation ought to cease early in July that the wood might have a chance to ripen before winter. We are learning that the ground needs continued cultivation to make it ripen well. In one orchard which I passed frequently during the summer the cultivation did not begin until June. The soil was not in condition after that time to retain moisture sufficient to give size to the fruit, and many of the peaches were not worth harvesting.

The territory upon which peaches are grown is rapidly widening. Many trees being planted upon the lands both west and south of the island region. Whether the business is to be overdone your secretary says I may discuss later.

The four co-operative shipping associations still market great quantities of fruit, and are apparently very popular with their members. The cost per bushel for packages, grading and marketing peaches in this way was about twenty cents. It is an ideal method where there is much fruit to market.

Observations made the past summer convince us that our entomologist needs to revise his information about the peach grub, at least for northern Ohio. In our searches last summer the first empty pupa case was found July 20, about a month later than we have been taught that the perfect fly emerges. This may have some bearing as to where to apply preventive measures.

Of the three essentials to success in peach culture cultivation, pruning, thinning, the last may be regarded as the most important. The vitality and fertility lost in ripening an unnecessary amount of seeds can never be regained.

A richer harvest awaits the Ohio peach grower than comes to his California brother when he gives his trees the same care, feed and attention.

In conclusion I want to say a word about the crop of men which fruit cultivation produces. They may not be a horticultural product, but are surely a product of horticulture. I believe the observations of others will bear me out in the statement that the commercial fruit growers are the brightest, most business-like and intelligent class of agriculturists which can be found. Other branches bring their followers less in contact with business men and business ways, while in this success comes only to the vigilant, the watchful and the intelligent.

Mr. Moore: I am glad he called the attention of the society to the correct naming of peaches, and I suggested in my report last year that the experiment station undertake the work. Now, I agree with Brother Miller that this would be the right thing to do, and I hope that the society and all will endeavor to have it done, because there is a great deal of misnaming of fruit of all kinds.

Mr. N. Ohmer: I would like to ask Mr. Miller if they are troubled with the rot in their plums. If so, what do you do to prevent it? It was bad with me this year. My trees are five years old, and they had considerable fruit on them, but it nearly all decayed. I gave them one

spraying of Bordeaux Mixture, and only one, because they were nearly all decayed. If I could learn how to prevent rot I would be all right. If they had the curculio I could handle that, by shaking the trees.

Secretary Farnsworth: The rot is the greatest obstacle to plum culture.

Mr. Miller: We consider the rot a much more serious obstacle in plum growing than the curculio. In my own orchard I have very little rot. We are hardly sure whether to attribute it to the dry weather or the thorough spraying with Bordeaux Mixture which our trees get. The majority seem to think that the rot can be very much reduced by thorough and effectual spraying with Bordeaux Mixture, giving a thorough application before the foliage starts and again afterwards, using paris green with it to prevent the curculio. The old plums, or the "mummies" which we find upon the plum trees in the spring, that rotted the year before, are said to be the source from which this rot comes. Last year in my own orchard I was careful to remove everyone of them and I had no rot at all.

Mr. Ohmer: How many sprayings would you recommend?

Mr. Miller: One before the leaf opens, and one after they bud. We generally give ours about four after the foliage starts, depending on how intently the curculio are working.

Mr. Ohmer: You are fighting the curculio, and I am fighting the rot.

Mr. N. H. Albaugh: I am happy to hear so favorable a report about the Elberta. You will remember that a year or so ago a little fault was found with it along the Lake on account of the curled leaf, and we were afraid that the curled leaf might interfere with the success of that variety, and I am glad to hear from Brother Miller that it has not, as the report seems to be favorable. But I can say after all is said and done that the experience we had this year in picking 100,000 bushels of peaches, that the Elberta after all is practically the queen.

Mr. L. B. Pierce: I would like to inquire about spraying for moth. We have been told in the *Ohio Farmer* that it is most invaluable, but it seems that it was not a success.

Mr. Miller: While there were less moth where I did the best spraying, the three sprayings did not kill half the moth. There is perhaps a smaller percentage where the spraying was well done than where it was not done, still I think we should spray more or put more paris green with it.

Professor Green: The quality of the paris green, I fear, has been so poor a good many times, that we have not taken quite enough, and it has done no good at all. I am confident that in a great many cases two applications are not sufficient, at least, I know we have failed to get good results from two applications several times. The last season we

made four applications and succeeded very well. I am not prepared to say that this is the best plan to follow, but I am sure that it is not safe always to depend upon two applications. I believe I should make three or four. I am beginning to believe that the moth is about as hard a thing to destroy as there is.

Secretary Farnsworth: That was a point that I wished to bring out. I think a great deal of our paris green is very poor in quality, and it is rather unsatisfactory, after we have spent time and money and have sprayed an orchard of any size to feel that perhaps we have been putting on some poison and perhaps some green sand. If we had some authority in the state or some means of regulating this, for instance as they do fertilizers, it would certainly be a great advantage. I know that in what we are using there is danger not only of doing our work for nothing, but if we are using a poor article of paris green and using a large quantity of it, when we get another brand that is a little stronger we put it on too strong and injure the foliage.

Mr. W. N. Scarff: I would like to ask Mr. Miller what three varieties of plums he considers the most profitable.

Mr. Miller: There are more of the Lombard grown than any other one variety, but I think if I were planting I would not use a great many of them. There are so many of them that the market must be overstocked with them. I have hardly had experience enough in many varieties to give a definite answer.

President Cushman: We will now listen to the *ad interim* report of Mr. S. R. Moore.

AD INTERIM REPORT OF S. R. MOORE, ZANESVILLE, O.

Mr. President, Ladies and Gentlemen of the Ohio Horticultural Society:

This has been one of the most peculiar, or unnatural seasons that I ever knew: Cold, dry, and at times extremely hot, alternately. The three coldest days in succession were February 6th, 7th and 8th, 1895. The mercury being continuously at and from 10 to 12 degrees below zero, when great damage occurred to the fruit buds. May 11th, we had a light rain with high wind, and turning cold on the morning of the 12th, a light frost, with but little damage to vegetation followed, with sprinkling snow and rain, clearing up in time to frost quite heavily on the morning of the 13th, with considerable damage to tender plants. The 14th, 15th and 16th continued cold. On the morning of the 17th, came the fatal blow, killing grapes, branches of all tender growths, and totally destroying all gardens of tender plants, such as beans, etc., causing everything of a tender nature, that could be replaced by new seed, to be replanted, thus retarding gardeners in the early production of many vegetables. Continued light frosts followed on May 18th, 19th, 20th, and increased on the morning of the 21st, with the ground quite dry, and continued so throughout the season, with an exceptional rain occasionally, about enough to lay the dust.

Corn that I planted on a west hillside May 17th, never had rain enough to wet it to the roots. Corn on the low bottom lands yielded a fair crop; some say in places a full crop was realized.

Some few growers report a fair yield of potatoes, and sold them at fair prices early in the season, before the shippers could get them here from the West, East and other places. The price dropped to 30 and 40 cents per bushel in a retail way, and they could be had in car lots at about 25 to 26 cents on the track. Many car loads were brought in here from the Northwest, and in most cases, were large and handsome tubers, and were disposed of readily at prices already stated. After the high freight rates, the commission to dealer, and expenses were deducted, it would look like the grower could produce them quite cheap, or else he was working on a small profit and for the benefit of mankind.

Some of our melon growers claim the crop was good, but the melons were not so large, and that customers were not anxious to buy; but could not give any good reason for falling off in the sales, and attribute it to hard times. How that could be is a mystery to me, as more people are employed in the various industries now than at the same time a year ago, and with comparatively good wages.

The pea crop was almost a failure, caused by drouth. Tomatoes were an average crop, but did not ripen as early as usual.

By conversing with gardeners at the market, and from reports at our county horticultural meetings, I find gardening this season has not been remunerative, yet the market appeared to be well supplied, and with some kinds of vegetables as fine looking as in the ordinary good seasons.

Commencing with the strawberry, the first fruit of the season, frost and drouth almost totally destroyed the crop. What was gathered was poor, and in a fair season could not have found a market. In a conversation with Mr. Grant Kearns a few days ago, one of the best berry growers in our county, I gathered the following items: He says: We gathered from seven acres one hundred and thirty bushels, which brought us an average of three dollars per bushel, not the crop of one acre of an ordinary season. Where we had the best results, were from a patch the second season's crop, and which now is looking better than the planting this spring of 1895. On the patch referred to, we used six hundred pounds of bone meal fertilizer to the acre, which cost \$26.00 per ton, and it appears to have considerable merit; we look for a fair crop from this patch in 1896.

Growers report on the last spring's planting compared to other seasons, at from one-eighth to two-thirds of a stand, which is not very encouraging with not numerously strong plants.

Raspberries along the line of the B. & O. R. R., as far east as Barnesville, appeared to be a fair crop, not a large one, and shipments were made from Concord and other points along the railroad, with what profits I am not informed. The price in the Zanesville market, from grower to dealer, was from one dollar and seventy-five cents to two dollars and fifty cents per bushel for Black Caps; the retail price for black, eight and one-third to ten cents per quart, for red 12 and one-half to fifteen cents per quart. A few may have been sold at ten cents per quart.

Currants were so frozen that but few were gathered. Cherries nothing. Plums in this immediate neighborhood shared the same fate as the cherries and currants.

Peaches were scarcely enough to use the plural number, and in some places the trees were badly damaged by the extreme cold, but in the peach belt, which is northern and northwestern Muskingum, and the southern part of Coshocton county, some of the growers cut their trees back and secured a pretty fair growth for so dry a season, and it is thought the trees are in a good condition for a crop in 1896.

Pears were about half a crop, with the usual amount of blight, fruit not large, but smooth and quite free from disease or insects. Bartlets sold at from one dollar to two dollars per bushel, according to quality.

Quinces suffered with the same blight as in the two years previous and produced but little fruit. Mr. Johnson Beattie had the best orange quinces brought

to the market; twenty-five made a peck, which he retailed at fifty cents. A car load shipped in here was sold by dealers at one dollar to one dollar and fifty cents per bushel. Unless some remedy for blight should be discovered, or it should discontinue from the same unknown cause as it originated, it would appear that growers would soon have to abandon the business. As to grapes, I said before, we hand them over to northern Ohio.

Apples, the king of fruits. Some peculiarities occurred in our immediate vicinity; our own and a few of our neighbors had but few apples, and some of them affected with a peculiar little dark spot on the side, developing into a larger spot, a sort of a dry rot, with the ripening of the fruit. It almost destroyed the entire apple; all varieties appeared to be affected about the same. Where only a few on a tree, all seemed to be affected, where more numerous, a portion escaped.

The crop throughout the county is considered a good one in quality, but far below the average in size of specimens. On inquiry of those having crops, as to spraying, I learned of no one doing any, and all report smooth, perfect apples, the best they ever had, except size.

Not a mile distant from us, northeast on the river bottom which lies barely above high water mark, stands a young orchard scarcely cared for, with sprouts about the trunks, and perhaps never trimmed, but from what was told me by the man who gathered the apples and made the cider, it was an immense crop. As he expressed it: You ought to see the load of fruit them trees have on; the limbs are laying on the ground. The same story and comments were made by many others, hence we believe it to be true. A short distance west, east and south there were but a few trees bearing anything like a crop; a little farther either direction could be seen orchards breaking down under their desperate efforts to show their productive capacity. Altitude did not appear to have anything to do with the productiveness; as was demonstrated, low lands had crops, medium elevation and high lands all about the same, only in blotches.

The twig blight this year was not so prevalent as in the past. The Tetofski and Wealthy, two of the worst last season, had scarcely any traces of it this year. From three trees of Wealthy, that were young and just beginning to bear, we removed every branch that was affected last fall and gave them a liberal supply of coarse manure; they made a good effort this year of drouth to renew their loss of branches and we hope for good results.

Cider was abundant and sold at from two dollars to three dollars per barrel. Retailed at from eight to twelve cents per gallon. Apples, picked (winter), sell at ninety cents to one dollar and twenty-five cents per barrel. For the week ending November 30th, we learned that from fifteen to twenty car loads of apples were shipped to Chicago over the B. & O. R. R., and other points west. A large per cent. of these apples are brought in from adjoining counties, south and east over the B., Z. & C. R. R. and Z. & O. R. R. Others may have been shipped, but we failed to learn of them. None have been brought in to this market from other states, so far as we know.

Considerable taste in the way of planting trees, shrubbery and flowers is now being displayed in the suburban places about town, and some farmers are getting object lessons and following along in that line, by planting more trees, flowers, etc.

Our Horticultural Society claims a share in promoting the beautifying and adornment of many places, that would otherwise be a disgrace. And just here it may not be amiss to say that we have with us the prickly lettuce, which appears to me to be a dangerous weed, and one that thrives in any place, matters but little as to kind of soil, it will flourish. Would it not be a wise movement for our State Society to memorialize the state legislators to strengthen the present Ohio noxious weed law? If vigilant efforts are not made, you will find it in lawns, meadows, and in every nook and corner about your homes. I only offer this as

suggestion, that by a united effort it may be wiped out as any contagious disease can be.

On August 10th we had the pleasure of a trip to Cleveland, all caused by a low excursion rate of two competing lines of railroad; taking the C., A. & C. we landed at Hudson at sunrise, under a pretty hot sun, but not to be baffled by anything, we visited our well-known ex-secretary of the Ohio State Board of Agriculture, Dr. W. I. Chamberlain. A glance through his well-kept orchard soon convinced us that the frost had almost totally destroyed his apple crop for 1895, except a few Baldwins. Thirty-six acres in potatoes claimed our attention, all in one field, with rows one hundred rods long and beautifully straight. Twenty acres of this patch was Sir William, which was receiving the final working, and was the most promising of all the varieties in this great field.

A call next at Mr. T. B. Terry's place, where only a few moments were spent in looking over his sixteen-acre field, which had already then began to ripen. It was worth the effort to visit the two well-known writers and see their model farms, and know for one's self that they practice what they preach.

Arriving at Cleveland at midday under a scorching sun, we hastily made our way to the house of our worthy president, Mr. E. H. Cushman, of Euclid. Here our eyes feasted on the great and beautiful Gladiolus fields, such a variety no mortal man can attempt to describe, or an artist to paint.

After testing plums and Worden grapes, then just beginning to ripen, we were shown a large number of different varieties of strawberries, set this spring for the purpose of comparison. Some were excellent growers, others medium, and some quite poor. In another season, I take it for granted, we will get the results of his experiment. On leaving abruptly (as we were running on schedule time) Mr. Cushman loaded us down with beautiful spikes of Gladiolus, which were so much admired by all who saw them.

I believe more rain had fallen there than in this section of Ohio, as at Mr. Chamberlain's place spots, where they were working in the potatoe field, were full wet, from a rain a day or two previous to our arrival, while we at Zanesville had only enough to lay the dust. Then on Monday afternoon, the 11th, at Cleveland, they had almost five hours' rain, while at Zanesville it was scarcely perceptible.

There being no discussion upon this report, the president called for the *ad interim* report of Mr. L. B. Pierce, of Tallmadge, Ohio.

AD INTERIM REPORT OF L. B. PIERCE TO THE OHIO HORTICULTURAL SOCIETY.

The spring of 1895 opened with flattering promises to the fruit grower and gardener. Everything in the fruit line excepting peaches and the more tender plums and cherries promised a fair crop, the bloom of apples, pears, strawberries, raspberries, grapes and quinces being exceptionally full. April was dry, enabling gardeners and farmers to push their work, and a large acreage of potatoes, onions and early vegetables was planted.

The latter part of April was almost as warm as mid summer and vegetation pushed forward with a vigor unparalleled, for that season of the year. Everything betokened an early harvesting of early vegetables and strawberries, up to the second week in May, when there was a sudden change in the weather program. A cold wave settled down, and the tender watery growth made in the hot weather was unable to stand the pressure.

A succession of frosts unparalleled for their severity, cut off the grass in pastures and meadows, and such hardy vegetables as onions, early cabbage, beets, peas and

radishes were nearly wiped out, or else so checked in growth as to take weeks to recover. Apples and pears and red raspberries partially escaped in a few localities, but cherries, quinces, black raspberries, grapes and strawberries were nearly all killed.

The second frost took about all that was left of early gardens, and left early and late gardeners upon the same footing. All could start even whether they had glass or not. It was too late to sow onions or start early cabbages, so the vegetable gardeners and fruit growers had but one resource, to plow up and plant such vegetables as were seasonable. This was done to a very large extent, and the result was a terribly congested market in August and September, and leading vegetables sold so low as to little more than pay the cost of peddling.

Strawberries were nearly a failure and what were grown were so poor that people refused to buy them before the season was over. My own crop upon three and one-fourth acres, two of which was new plantation in excellent shape, was less than fifteen bushels. From three acres of raspberries, one-half acre being well-established red and yellow, in excellent shape, and one acre of black, one year planted, I picked about forty-two bushels. On the lowest ground over ninety per cent. of the black cap fruit was killed, and the new shoots, eighteen inches high, were killed back to the ground. Red raspberries and blackberries brought high prices, but the black caps were only a trifle higher than in more plentiful seasons. They had to compete with a good deal of shipped stuff from more lucky regions, among which was a liberal supply of the largest and handsomest blackberries I have ever seen. These blackberries must have been grown some ways south, as they began to arrive about July 4th. Currants and gooseberries partly escaped the frost and were in good demand, the supply being short. There was a general apathy in the fruit market all summer, very little canning being done until grapes and peaches were freely offered in September and October. Almost every cellar was stocked with last year's canning, much less being consumed on account of the abundance of bananas, which are sold daily all the year around by Italian peddlers.

Bananas are the lazy housekeeper's main reliance. They require no preparation and no sugar, and being very cheap, are used in constantly increasing quantities, and are then most serious competitor the Ohio fruit grower has to contend with. Many well-to-do people buy them by the bunch and eat them as freely as apples. Melons were abundant and cheap, and also Southern California fruits. California apricots, Bahama pine apples and Mississippi peaches all arrive very freely before strawberries are half over and divide the market. In seasons when Southern strawberries are plenty and cheap many people get tired of them before home-grown berries get to their best, and then instead of buying strawberries, these people invest in the other fruits mentioned.

It is generally supposed that we had a dry season in Summit county during the past summer, but enormous crops of corn, potatoes and oats were produced in spite of the fact that less than one-half the usual amount of rain fell in the eighteen months previous to September, 1895. The rains were timely, however, and careful tillage pulled hoed crops through in nice shape. New berry plantations were not so fortunate however. Dry weather and hot blasting winds in planting time, followed by frosts that cut the new growth of raspberries to the ground, and the total acreage reckoned upon the basis of an average good stand, is not larger than two years ago, although the nominal area is probably increased.

Many acres of the planting of 1894 were plowed up without producing any fruit of consequence, it being necessary for the owners to grow vegetables and corn fodder upon the land. The only successful attempts to protect strawberries from frost was by covering with straw, but so many and so severe were the freezes, that the final outcome was not very brilliant. I am unable to give any figures,

as there is a growing disposition among commercial fruit growers not to give anything away, and I dislike to pry into people's private ventures or business. The frosts were so severe that no fine distinctions could be drawn between mulched and unmulched, and everything close to the ground was like the darkey's wife, as dead as it could be. The story runs that a darky preacher had the misfortune to lose his wife by death. The day after the funeral he married. Some of his friends remonstrated with him and chided him for unseemly haste. "Why," answered the Rev. Darkey, "Betsey was as dead as she could be fo' days ago."

Although the summer was very dry, very little was done in the way of irrigation, in fact many of us had scarcely water enough for household and stock purposes, let alone watering gardens. What promises to be a very successful irrigating plant is in operation three miles west of Akron upon the celery farm of Atwood Bros. They own a thirty acre tract of deep muck in Copley swamp. They dammed a creek two feet to get sufficient water, and carried it sixty rods in nine-inch sewer pipe with cemented joints. The fall is ten feet in that distance. The water comes to the highest point of the tract and is distributed by means of a five-inch sewer pipe with cemented joints, which crosses the upper end of the rows, with hydrants every sixty feet. It is raised six feet and forced through the pipe by means of a second-hand threshing engine, bought at a bargain for \$100. The rows are thirty rods long with a slight fall toward the farther end. Half a dozen are irrigated at once, channels being first opened with a kind of snow plow, and a little additional hand-hoe work. The furrows are closed soon after watering the same way. The celery is planted in rows thirty inches apart, and five inches in the row. Some difficulty and loss was experienced in August from a rainfall of nearly two inches the day following a thorough application of the brook water. The saturated muck could not absorb, or part with the surplus water quick enough, and the roots rotted, causing a more or less serious check, and some destruction of the tops. Two acres of late cabbage was about ruined. This experience shows that it will be necessary to thoroughly underdrain low lands which are to be irrigated, as it is often just before a heavy rain that the artificial watering is needed. The Atwoods are putting a vast amount of push and business energy into their experiment, and it seems, with a little more experience, that they will make a profitable undertaking of it. In spite of this summer's accident, they shipped a good many tons of very fine celery.

In this connection it is my sad duty to mention the sudden death of the pioneer experimenter in celery growing in Summit county, Mr. J. A. Borst, of Greentown, whose residence was just over the Stark county line, but part of his farm being in Summit. He was seventy-three years of age and about a dozen years ago, at an age when many retire from active work, he took in hand the clearing of a wild muck swamp of about one hundred and forty acres. This he subdued piece meal until at the time of his death, according to an account in an Akron paper, he had one hundred and ten acres in celery, cultivated upon shares by twelve tenants. If he who makes two blades of grass grow where one grew before, is a public benefactor, then how great is the extent of Mr. Borst's achievement, who made an unproductive swamp the means of livelihood to twelve industrious families. Mr. Borst was an active and enthusiastic member of the Stark County Horticultural Society, and entertained it at his residence nearly every year. The Summit County Horticulturists were always welcome there and some of us will always remember our visits there, and recall with regret the departure of this man of kindly ways and energetic principles. During the year past I have made two short trips away from home in the interests of horticultural work. On March 6th I attended the organization of a new horticultural society at Columbiana, Ohio. A charter membership of more than thirty members was enrolled, all practical fruit growers, and I have watched the papers all summer in hopes to see a horticultural peep from

this newly-fledged offspring from the State Society. I have seen or heard nothing and fear it got frosted with the berry crop of that great berry-producing county.

On the 18th of September I visited the home of Mr. Gault at Ruggles, Ashland county, to see the perpetual raspberry originated by that gentleman. I found a bearing plantation of three acres, a spring set plantation of the same size, and another small plantation, also spring set, of about one thousand plants. The latter was upon muck and had suffered considerably from drouth, and there was ten per cent. of missing plants. The other three acres of young plantation was nearly perfect and had made a better growth than spring set plants in my own county. The old plantation, consisting of two or three year plants, set seven feet eight inches apart by three feet, was a wonder of vigorous growth and health. There was no commercial plantation or large plantation of raspberries nearer than three miles, so I was unable to compare it with other varieties, but in a life-long experience I have never seen a more uniformly thrifty three acres of black cap raspberries in one plantation. Propagation from rooted tips was being carried forward, and to do this it is necessary to pinch the tips of the new growth in August. This checks a disposition to fruit for the time being and the tip being put at once into the ground it gives up the attempt and proceeds to make strong roots. Three rows had not been pinched and these were loaded with berries in all stages of maturity from those allowed to dry up upon the bushes to those just opening the blossom. Those from which the ripe fruit had been cut in August were throwing more fruit clusters from the axils just below and some of it was ripe at the time of my visit. The habit of the bush is, if unmolested to commence bearing fruit upon the tips of the new wood and when this is picked produce more lower down, and if frosty weather did not come the process would go on until all the fruit buds had pushed. The winter cuts this short, but the canes hold themselves in reserve, and when spring pushes all the buds into growth at once, a crop is produced just as if no fall bearing had taken place, the fall crop being upon the ends which are generally cut off in spring pruning. Mr. Gault, and I think Mr. A. I. Root, of Medina, who is the next largest experimenter in this new raspberry, claims that the summer crop is one-third larger than that produced upon an equal area of Gregg. I see no reason to doubt this claim, for the plants are vigorous enough to do it and certainly ought to. The original plant and some sub-divisions of it stand near the garden fence and are vigorous and healthy although five and six years old. I found Mr. Gault a genial gentleman of prominence in church and society in his town, and the possessor of a fine farm of two hundred acres. I went there strongly biased against the claims made for this berry, but my very first glimpse of the magnificent plantation at once dispelled any doubts as to the future of this new raspberry. The fruit is jet black, of excellent flavor, and the clusters of fruit are marvelous, sometimes numbering eighty upon a single tip. One compound stem, apparently five canes growing side by side divided into three tips, about six inches from the end, and we counted two hundred and forty berries upon the three. The raspberry is an acquisition simply as a July bearer and leaving out any claims for perpetual fruiting.

Mr. W. N. Scarff: I would like to ask Mr. Pierce what he thinks of the value of the Earhart.

Mr. Pierce: I am not acquainted with the Earhart. I was sorry I didn't know more about it when I got to Ashland. I have been told that the Earhart bears on the lowest shoots of last year's growth, while this is different. Lumm's Everbearing bears on the shoots down near the bottom, and don't come on until after the rest of the crop is matured.

Mr. Scarff: Is it the same principle as the Gault?

Mr. Pierce: No, I wish I could make that plain. The Gault is entirely different from any everbearing raspberry I know anything about. You know that all raspberries bear on last year's wood. It is on side branches and makes a growth of six or eight inches. The Lumm's Everbearing bear on side branches from last year's shoots from the ground. The Gault bears on wood that comes out on the wood that was frostbitten this spring. The new growth of shoots produce a new crop lower down.

Mr. Scarff: Then your general crop, do you get that from the same wood?

Mr. Pierce: Yes, the general crop the next year takes up where that leaves off.

Mr. Ohmer: I have been growing raspberries for nearly forty years. I planted everbearing raspberries at the beginning, Lumm's Everbearing and the Ohio Everbearing, and I have never yet found one that was profitable. That is, people don't want raspberries when they have other fruits. Raspberries have their season.

Mr. Pierce: You are stealing Mr. Green's thunder.

President Cushman: I think we better keep on with our ad interim reports. Unless there is something important we will go to the next ad interim report.

AD INTERIM REPORT OF F. G. WITHOFT, OF MONTGOMERY COUNTY, OHIO.

Not for a number of years has there been a full apple crop in Montgomery county till the past season, when every tree, young and old, was loaded down with fruit, though the long dry summer, in many cases made the fruit small.

Pears were an average crop, and plums better than common and freer from insects; cherries bore freely, especially those of the Morillo class, Early Richmond, Dye, House, Montmorency and Late Duke, of the newer semi-sweets Windsor and Sederberg seem the best.

At the remunerative prices of two dollars to three dollars per bushel many found that their cherries paid better than any other fruit. Peach buds were killed by a cold snap in the winter; of the newer peaches tested lately, Elberta, Dean's Red, Deaconess and St. Clair, are all large and fine. Crosby is of good flavor, but many growers desire a larger peach, yet the hardness of the Crosby is much in its favor. The Triumph, a new yellow fleshed free-stone peach, originating in Georgia (by a Michigan man) has proved itself a good bearer and a fine shipper, being as early as Alexander, it promises to revolutionize the early peach market. Sneed, also, ten days earlier than Alexander, but the same class of a peach, has considerable merit. Of the Japanese plums the Burbank has proved probably the best, with Redvogolt as good, abundance (Botam) next, being planted south more than any or all of the other sorts. Willard, the earliest, but smaller of these Japanese plums, are hardy in tree and fruit and are certainly great acquisitions.

On small fruits the dry weather shortened the crop very much in the Miami valley. In strawberries, Greenville held its own very well, also West Union. Among the newer sorts, Marshall promises well. The Palmer raspberry for late,

has fully kept its place as one of the best blacks. Eureka seems to have taken first place, however, as the very best of the blacks, early, large and very prolific. Ohmer blackberry was hurt a little on some low lands, but generally passed the winter in good shape and holds a front rank among blackberries for size, flavor and general good qualities.

Taken all in all, notwithstanding the hard times and correspondingly low prices of grain, vegetables and nearly everything, the fruit growers of the Miami valley have good cause to be satisfied with the situation.

President Cushman: The report just read is now open for discussion.

Mr. L. B. Pierce: I wish to inquire if that yellow variety, the Triumph peach, is a freestone?

Mr. Withoft: Yes sir, it is.

Mr. Pierce: How large does it grow?

Mr. Albaugh: It is as large as the Alexander. Mr. Hale and I visited the original tree and saw some two hundred trees in bearing. Some trees were grafted in the original stock. The Triumph is an early freestone, ripening with the early Alexander, and is shipped all over the United States, and everyone thinks it is a grand good thing that it ripens with the early Alexander.

The President: We will hear the report of Mr. E. M. Woodard, of Kirtland, Lake county, Ohio.

REPORT OF E. M. WOODARD, LAKE COUNTY, OHIO.

The winter of '94 and '95 was more severe in our section than had been known for several years.

The weather was mostly pleasant until after January 1st. With the beginning of the new year winter commenced in earnest. Not a great amount of snow fell; but for days the mercury hovered around the zero point, and on the night of January 13 (I believe it was) the government thermometers in the southeastern part of our county registered twenty-two degrees below zero. As a result some kinds of fruit and fruit trees were injured. The spring following was dry, cold and backward. Winter, which had held the earth bound for so long, seemed loth to relax its hold. The maple sugar season, which everyone predicted would be a good one, was not equal to the average.

The ground was deeply frozen, the days short, and the sun neither very bright nor very warm. This, with a cold north and west wind from a bank of ice in Lake Erie, made the season *poor, long and slim*, and the product *small* in quantity and *poor* in quality.

But after the clouds always comes the sunshine, after winter the spring, and old Sol seemingly repentant for his dilatory habits and slothful ways, pushes his work with such vigor that by May 10 everything promised an abundant harvest.

Berries of all kinds were full of blossoms and fruit, pears plums and cherries were heavily laden; grape vines were set with clusters enough to satisfy the most exacting, there being from two to four bunches on each branch. Never in my eighteen years' experience in raising grapes have I seen the new shoots grow so rapidly. The steel bug, which sometimes does considerable damage in eating the young buds, could put in only the work of a day or two, so soon did the new growth become too old to suit his fastidious taste.

At our last February meeting Mr. Waid spoke of an old German who was frequently asked by his neighbors what the weather would be on the morrow, his reply was: "Just you drive up to my house to-morrow morning and I tells you." Had Uncle John been asked the fore part of last May what the harvest would be, his reply might have been, "Vel, I dinks we have a *goot* big harvest of *every ding*."

We are met to-day on the "to-morrow" after the harvest and can tell what *has been* with much more certainty than what *will be*.

On the night of May 12 occurred a severe frost, killing strawberries, raspberries and currants on low ground and badly injuring the same on higher altitudes.

Some *vineyards* were completely killed, not a green leaf remaining; others were injured only in places, still others entirely escaped. This was followed by several lighter frosts, and on the nights of the 16th and 17th came two more hard freezes, and for a time it seemed that our fruit was doomed to utter destruction. Jack Frost did not do his work by any rule of three, it was rather "here a little and there a little." After the first frost one grape grower made the remark that he did not wish his neighbors any harm, but it was a consolation to know that he was not the only one to suffer.

I have a vineyard of fifteen acres on high ground from which the lake can be seen for twenty miles in extent. After the first frost all the live shoots to be found were on the lowest ground at the extreme north end. On my other vineyard one and one-half miles distant, the southern exposure on quite a steep side hill was uninjured; the extreme north was frosted. Across the road my neighbor's vineyard, protected on the south by woods, was frozen where most shielded. A short distance from my large vineyard was one of nine acres, protected on the south as the one just mentioned, that was not hurt by any of the frosts. All theories about the location of frost, to use a slang expression, were "*busted*" last spring.

The leading varieties that were most susceptible to frosts were the Niagara and Worden. In most vineyards that at first did not seem to suffer much, the fruit shelled somewhat just after blossoming, making the clusters rather thin and straggling.

Half-grown sweet cherries in a few days turned black and fell from the tree. Plums, the size of small peas did the same. Apples and pears that in the spring had promised so well were in doubt, and the perplexing question was What *will* the harvest be?

Some fruit growers were consoling themselves that what was others' *loss* was their *gain*, and that the prices of fruit would be far ahead of other years, and predicted that grapes, for instance, would bring from twenty-five to forty cents per basket. Again were they disappointed and returns have been but little in advance of last year.

Notwithstanding the short crop strawberries sold as low as six cents per quart at home for Bubachs, Haverlands and Warfields, and ten cents per quart was about the highest received.

Souhegan and Palmer raspberries brought from five dollars to seven dollars per two-bushel stand. Greggs from three dollars and fifty cents to five dollars. The red varieties averaged about six dollars per stand.

For three reasons currants have brought a fair price, from one dollar and seventy-five cents to two dollars per bushel. The demand for cherries was good at paying prices, bringing eight and ten cents per quart.

The severe winter, followed by a very dry summer, hurt the bearing peach trees, and the crop was *very* light. But little of the fruit was first-class, owing to the drouth and the diseased condition of the trees. It looks as though we would have to depend upon the young orchards for fruit in the future. The average price per bushel was a dollar and a half.

Plum trees that bore in our county were few. I know of but one orchard

of any size that fruited, Mr. M. E. Sweet's, of Kirtland, who is with us to-day. This orchard is mostly Damson, Shropshire and Lombard, with a few trees of Union Purple, Duane Purple, Reine Claude, Bradshay and Wild Goose. These trees were in healthy condition and bore large crops of fine fruit. At another place I saw trees of the Minor and Robinson heavily fruited.

The crop of pears was comparatively small. The spring frosts causing the fruit to drop before maturity, and a good deal that did ripen was far from perfect. The trees in our immediate neighborhood have blighted more than I ever knew them to before. The varieties most affected were Bartlett's Flemish Beauty and Clapp's Favorite. The many freezes were followed by very hot weather, and the blight first appeared the last of June and continued through July. I know of several orchards that seemed to be completely ruined.

Be the cause frost, sour sap, fungi or microbe, the result has certainly been disastrous to the pear grower. The prices for fruit varied from seventy cents to one dollar per bushel.

Apple trees that were a "sea of glory" in the spring were decidedly "choppy" before fall. Still a few orchards that have been well cared for and sprayed for several years, and were in favorable locations, bore a heavy crop of fine fruit. One of my neighbors in an orchard set in '76 and '77 picked sixty-four one-half bushels of Baldwins from one tree, besides twenty more from the ground. Another, who has 25,000 bushels in his cellar, told me day before yesterday that he gathered sixty one-half bushels to each tree from a dozen or more trees. Two of his men picked two hundred and seventy-four baskets in eight and one-half hours. No. 1 fruit brought fifty cents per bushel.

There were shipped from our station (Willoughby) by the Northern Ohio Grape Co. 70,000 baskets, not quite one-third of last year's output. These sold from twenty-two and one-half cents for early Wordens to ten cents for Concord, shipped during the hot weather. The average price for all varieties throughout the season was thirteen cents per nine-pound basket. Growers that drew their fruit to Cleveland obtained better prices than these, as high as thirty cents for early Wordens. One fact was noticeable about the fruit that set after the frost. On some kinds the clusters were much nicer than the first setting, this was especially true of the Lindley. This variety does not naturally cluster well, owing to imperfect fertilization, but this season the clusters were as compact as the Delaware. On October 5th I picked fine clusters of Hartford, Early Victor Worden, Lady and Ives, all of the second setting.

Fruit *planting* in our section continues each year notwithstanding the low prices realized. Some are setting vineyards, although not as largely as formerly. Last spring and this fall the smooth-tongued tree agent has been with us and the planting of plum and peach trees has been *booming*.

In a few years we will have Mountains, Toledoes and Diamonds growing on our trees.

In reply to a letter written to J. J. Harrison he says: "We are having more inquiry for peach trees than anything else, although not as much in this particular section. We are selling more plum and apple last season and this, than for two or three years previous. The demand for grape vines continues and the prospect is that they will be cleaned up close in the spring. Small fruit plants in general are not in as good demand as heretofore. I know of no young apple orchards being planted in this or adjoining counties. Yes, I think the time not far distant when good apple orchards will be better appreciated than now. The old ones are fast passing away and few or no new ones are coming on to take their place. I consider it, of all fruit, the most important."

Mr. President, I cannot report very great success in securing members to the State Society, or in organizing local horticultural societies. At our last county-

meeting we tried to secure enough members to entitle us to a delegate to this gathering, but failed. However, I bring the name of one new member, and am just now corresponding with parties in three or four places, and hope to do something more in that line. Next week I expect to attend the institute in Ashtabula county with a view of arranging such a society at Geneva. A good deal of fruit has been planted recently in this county, and in Geauga, also in the extreme southeastern part of Cuyahoga county, and local organizations should be affected at some of these points.

As Dr. Lyman Beecher and sisters were out driving at one time, the horses became unmanageable and they were thrown with considerable violence to the ground. One of the sisters immediately fell on her knees and commenced thanking the good Lord that they had escaped so miraculously. The good doctor turned to her and exclaimed, "Speak for yourself, speak for yourself, as for me, I have some pretty hard thumps," and so, Mr. President, some of our fruit growers have had some pretty hard thumps the past season, still we expect to continue in the good way and trust for better things in the future.

President Cushman: This paper is now open for your discussion. There being no discussion, we will hear the ad interim report of H. H. Aultfather.

AD INTERIM REPORT FOR STARK COUNTY, BY H. H. AULTFATHER, MINERVA, OHIO.

Mr. President, Ladies and Gentlemen:

The year 1895 is noted for the coldest weather in January for years; for its drouth lasting from April until November; for its freezes in May; for the great apple crop in the southern part of the state and for its peach crop near the lakes; and our locality depending on these to furnish our markets with all of our cherries, peaches, plums, and grapes, and the most of our apples and pears.

Early in the month of February many of our fruit growers were satisfied that the peach and many of the plum and cherry buds were killed by the cold weather of January. But not until spring were they aware that most of the leaf buds on the peach trees were destroyed.

The weather was cool and spring did not set in until the 20th of March, and from that on throughout the month of April until the middle of May, the ground was dry; the weather warm and all things favorable for the growers to set out plants, sow seeds and cultivate their crops.

Those who prepared their ground in the fall or early in March and set their plants the first of April secured a good stand; but where planting was delayed until the first of May it generally proved almost a failure, for the weather was very warm accompanied by hot drying winds and thousands of plants perished.

The apple, pear and quince trees were a mass of bloom, and the crop of small fruits were so promising that little did any one imagine that by the 20th of May, excepting the care of plants, many fruit growers would be completely out of the business for the year 1895.

There were no killing frosts throughout the month of April and first of May. The weather was all that could be desired for the perfect polenization of the blossoms, and by the 12th of May most all of the trees had shed their bloom and set an abundance of fruit for a crop and thousands to spare. The first bloom of the strawberry were past their best. Many berries being almost large enough to ripen. Early varieties of raspberries were coming into bloom, when on the night of the 12th of

May a cold wave swept across the country, and by the morning of the 13th the temperature had dropped from four to ten degrees below the freezing point, and the grand prospect for a bountiful harvest of fruit had vanished.

Then again on the night of the 16th of May we were visited by another freeze equally as severe as the one on the 12th.

Some had covered their strawberries and allowed it to remain one or two days after the freeze thinking to save the later blossoms, and uncovered them just in time to get the full benefit of the last freeze, which seemed a that time to make a clean sweep.

The weather continued dry and cold until the first of June. About this time it was found that those having orchards located on the hills, would have some fruit, although many of the apples and pears were frozen so they turned black they stuck on and finally turned to their natural color and made fair fruit.

Then for once in their lives, those located on the hills could sing.

"The hills of Ohio, how proudly they rise,
In the utmost of grandeur to blend with the skies.
With fair azure outline, and tall ancient trees,
Ohio, my country: I love thee for these."

While down a little lower and in the valley the following words to the old tune would suit them better:

How tedious and tasteless the hours,
When the great fruit crops I no longer see;
The grand prospects of the sweet flowers
Have all lost their fortune to me.

Hence, the season of 1895 will long be remembered by many of the fruit growers of eastern Ohio; especially by those of Stark, Columbiana, and Tuscarawas counties. It would be hard to give an estimate of the damage done by that freeze, but it seemed to be more severe in these counties than farther north or south of them.

The strawberries were a short crop, tedious to gather, not attractive in market and prices for home grown berries low considering the quantity of them. Probably caused by the scarcity of money and the inferior quality of the berries. Too many growers allowing rubbins and poor berries put in the baskets; also by the heavy shipments of eastern berries to our markets.

The Crescent, Mickel, Bederwood and Warfield I believe are considered the hardiest varieties under cultivation.

But, on my own ground the Bartons Eclipse was very little injured and produced almost a full crop; while the Haverland, Bubach Enhance, Warfield and Lovett growing along side of it, produced scarcely any berries one-half acre on the north side of this patch was located from 10 to 30 feet higher, and were not injured by the frost and had it not been for the dry weather they would have produced a full crop. Another patch of one-third acre that had been mulched heavily. The straw had been removed in order to secure plants. The ground was dry and the digging had left it rough and uneven. After the freeze this was cultivated to loosen the soil about the plants and make it in condition for a plant bed. The mulch was placed in every other space between the varieies. Those plants put forth quite a number of fruit stems and produced fully one-fourth of a crop of the finest berries we had last season.

There were two rows each of the following varieties: Edgar Queen, Tennessee Prolific, Windsor chief, Greenville, Dayton, Bubach, Lovett and four rows of seedlings which were not cultivated and produced no berries.

I might say that there was three-fourths of a crop of the Windsor Chief, as they bloomed so late, that they were not injured much by the frost. Many new patches were set out in the spring, but only those planted early, or lying in the path of the local showers have made a good stand of plants.

The grubs were numerous, and did much damage in some places.

On account of the poor stand in last season's setting of plants, many old plantations have been cultivated and will be allowed to fruit another year. Not much can be said of the new varieties. Timbrel produced a fair crop considering they were frozen the second time. They were not high colored, but no doubt will make a good berry for home trade.

Tennessee Prolific produced some fine berries, is a thrifty plant, and we think well of them.

The early varieties of raspberries were badly damaged by the freeze, and produced a small crop which sold from \$3 to \$4 per bushel.

The Gregg which is more generally planted, was injured more by the drouth than by the freeze, and where well cultivated produced good crops. As usual the prices were low, \$2 per bushel being the selling price.

Although the Gregg is healthy, a good yielder and easily cultivated, complaints are made that it has too many seeds and its fruit ripens at the time when the markets are glutted. Less money is realized from it than from other varieties which do not yield so well. My opinion is that if less acres were planted and the soil made rich with barnyard manure and kept thoroughly cultivated there would be no complaint about the seeds, for the berries would be large. Not over one-half as many to the quart. The older growers of this fruit are wanting something better and many think the Eureka will soon take its place.

The young canes of the raspberry were frozen back causing them to branch close to the ground, and many of the rows are low and will be difficult to gather next season, otherwise they are healthy and almost free from anthracnose and should produce a full crop next season.

The red varieties produced a full crop; for which there was a good demand. They sold readily at from 6 to 10 cents per quart.

Those who have fruited the Golden Queen speak well of it.

The blackberry which has been fast taking the place of the raspberry as a canning fruit were so badly killed that there was not enough left for the birds.

Many old plantations were plowed up and planted with corn, potatoes and melons, and new patches planted instead.

Some patches where the canes were young and healthy, the bearing canes were cut out as soon as it was known there would be no crop, then cultivated the same as new patches, while others allowed the bearing cane to ripen their wood and were left to be taken out at a more convenient time. The new canes have made a fair growth and are in good shape for a crop in 1896.

In varieties the Snyder takes the lead on account of its hardiness, but there has been an increasing demand for the Taylor and Erie and some inquiries for the Eldorado.

There were no cherries, peaches, plums, quinces or grapes worth mentioning, and but few apples and pears in my locality.

Throughout the eastern part of Columbiana, Jefferson, the southern part of Carroll, northeastern and western part of Stark county, where the orchards were located on high land they were loaded with apples. Considering the drouth the fruit was smooth and of fair size and quality, but I am told that many are not keeping well.

The apple, cherry and plum trees have made a healthy growth and are in good condition to winter well.

Pear and quince trees have blighted badly. Even the Keifer showed blight in some orchards. In regard to the condition of the peach trees as stated most of the leaf buds were killed in winter. And where nothing was done they were slow in starting their leaves, made a poor growth and are in the worst condition for years. They were so weakened they have become a prey to the borers, the fruit bark beetle, and disease, and will finally have to be cut down and cast into the fire. But where

cut back early in the spring and thoroughly cultivated they have made a vigorous growth.

The planting of cherry, peach, pear, and plum are on the increase and some varieties I think will be fully equal to the demand, but the planting of the apple is too much neglected. There are thousands of acres in eastern Ohio that should be planted with apple trees, and the orchards in a few years with proper care would become valuable, for I have been reliably informed that there are fifteen (15) cold storage houses in Ohio along the line of the P., Ft. W. & C. R. R. east of Alliance, O. I have ascertained from a fruit grower near Columbiana, Ohio, who gathered over 2,000 bushels of apples from his own orchard this fall, and who has four cold storage houses, that by the first of November, 1895, there were over 6,000 barrels of apples stored at the towns between Alliance and East Palestine, inclusive, a distance of only thirty-three miles by rail.

The most of the fruit for 1895 was bought in Illinois. In 1894 in Missouri. In 1893 in Virginia and in 1892 in Maine.

I have seen some very fine specimens of different varieties of apples that were grown in the several counties of this locality last season, and my impression is, if the orchards were planted and cared for here as they are in other states, our farmers could soon share a part of that trade.

The fruit crop being destroyed many of the berry growers turned their attention to the growing of feed for their stock, and the raising of potatoes and melons as a money crop. The number of acres planted to melons was fully double that of last year.

Where the preparations for this crop were made early a good stand was obtained; they ripened early and made the grower some money, but when planted on sod ground that was prepared late in May, much of the ground was so dry that the seed did not germinate at once, and the set of vines was uneven, and many of them so late they never ripened, and the prices were so low that they did not pay expenses.

The growing of potatoes has become quite an industry. The acreage was one-third larger than that of last year. The yield was from eighty to one hundred and fifty bushels per acre of mostly marketable tubers, which sold from twenty to twenty-five cents per bushel.

The Canada prickly lettuce is getting a strong foot hold in this and surrounding counties, and unless the farmers take some measure to destroy it next season, it will soon be the worst weed pest we have.

I have received quite a number of posters and bulletins from the experiment stations, in regard to the San Jose scale, and have placed them where I thought would do the most good. To my knowledge there are no orchards infected with that scale in this part of the state. But many fruit trees are being sold by agents who get their trees from outside the state; and it may be brought in and distributed over a wide area before we are aware of it.

Another pest, the fruit bark beetle, has become numerous, and we have found them upon apple, plum and peach trees. We are told that they do not attack healthy trees (which statement I am unable to dispute), but if they do not they can tell where the tree is deceased long before the grower can, and when a tree is once attacked the quicker it is burned the better.

There has not been much spraying done except for the codling moth, and when the fruit was killed the work ended for this year.

The movement made about one year ago to enforce the law in regard to the black knot has not been as effective as it was thought it would be, but we have found one of the weak points in the law. There has been no trouble where the commissioners have been appointed by the trustees; but the wording of the law is such that it gives the trustees their choice whether they appoint the commissioners or not. As far as I have learned commissioners have been appointed

in one township in Columbiana county and three townships in Stark county, and as yet I have heard of no trouble in having the black knot removed in those townships. I presented a petition to the trustees of Paris township, this county, on the 26th day of last January. Up to this time they have failed to appoint the commissioners, and I was told by one of them that the law was not positive enough, as it said "the trustees may appoint," etc., and they would wait until they saw what the other townships would do before they did anything. The law should be amended so as to read the trustees "shall appoint," instead of "may appoint," for the destruction of the black knot will never be unless the law is enforced.

I have attended several meetings of the Stark County Horticultural Society during the year. Have always found them instructive and interesting and well attended by the members. I here note the death of the most prominent celery grower of this state, Mr. J. A. Borst, of Greentown, O., who was an active member of this society and also a member of the Ohio State Horticultural Society.

I attended the annual fair of the Stark and Carroll County Agricultural Societies. Although this has been an off year in fruit growing, it was readily seen that the Horticultural Society of Stark county had kept the pledge they made with the Agricultural Society one year ago, because there was a much better display of fruits and vegetables than is often made in years of abundance. In fruits I noticed one plate of plums, one of peaches, eighteen of grapes, fourteen of quinces, seventy-eight of pears, representing twenty-two varieties, and four hundred and ninety-two plates of apples, comprising thirty-eight varieties. At Carrollton the display was not so large. There were on exhibition four plates of peaches, one of pears, one of grapes, five of quinces and sixty-eight of apples.

The display of vegetables was large and showy at both fairs. I only noted the potatoes. At Canton there were displayed one hundred and twenty-seven baskets, at Carrollton one hundred and sixty-one baskets. I think they were the finest display of potatoes ever made in the counties. They were large, generally smooth and well selected, and the baskets were well filled.

Since the February meeting I have assisted in organizing two county horticultural societies. The Columbiana Horticultural Society was organized on March 6, at Columbiana, O., with thirty-seven charter members enrolled. The constitution and by-laws were adopted and the following officers elected: A. W. Harold, president; J. W. Weaver, vice president; F. B. Windle, secretary; A. S. Snyder, treasurer; E. Cope, M. Grove and J. B. Culp, executive committee. The state officers present were L. B. Pierce and myself. This society has held regular monthly meetings since it was organized.

The greatest drawback is the county is large and most of the members are located at one corner of it, but as its members are progressive and up to date fruit growers, it will not be long until the meetings are held over the county. I think we will have some good reports from this society.

While at the Carroll county fair I met with many persons who are interested in horticulture and secured enough names to guarantee the organization of a horticultural society in that county. It was announced that there would be a meeting for that purpose at Carrollton on November 2d. On that date the Carroll County Horticultural Society was organized with forty-eight charter members. A constitution was adopted and the following officers elected: T. S. Simpson, president; Ray Harvey, vice president; Wm. B. Crawford, secretary; T. J. Donaldson, treasurer; N. Marshall, R. H. Lee, L. W. Hawk, executive committee. Mr. E. H. Cushman was present and assisted in the organization. The first meeting is announced to be held on the 11th of December.

I think the outlook for this society a good one, as the members are well located over the county, and many of them are turning their attention to fruit growing, for which Carroll county is so well adapted.

At the conclusion of Mr. Aultfather's report, the President appointed the following committee on membership: Mr. H. H. Aultfather, Hon. N. H. Albaugh, and Mr. G. W. Lawrence.

And thereupon, on motion of Mr. Albaugh, the convention recessed till 1:30 P. M. of the same day.

AFTERNOON SESSION:

The convention was called to order promptly at 1:30 P. M. pursuant to adjournment, and the President said: We will begin the regular afternoon exercises by taking up the ad interim reports where they were left off this morning, that being the disposition made by the committee on business. The next report will be that of Mr. C. W. Whitney, of Warren, Trumbull county, Ohio.

AD INTERIM REPORT OF TRUMBULL COUNTY, BY C. W. WHITNEY, WARREN, OHIO.

Mr. President and Members of the Ohio State Horticultural Society:

The past season has been the most disastrous to the fruit growing industry of our section of the state of any within my remembrance. No one need be told that late spring frosts were the cause. Strawberry patches produced from one-tenth to one-third of a crop. Our own planting produced nearly or quite one-third of a crop, and as picking cost only one-third as much for the patch, and prices were about twice as high as usual, I did not feel very depressed in spirits after the returns were all in, but others fared much worse. Some getting next to nothing, while one small grower, with perhaps one-half acre, covered the rows with straw before each frosty night and thus secured nearly or quite a full crop. The quality or size of the fruit was inferior as a rule, in consequence of the first blossoms and fruit being killed. However, my patches produced some very nice fruit, especially of Bubach, Wolverton and Barton's Eclipse, while Wolverton, Warfield and Parker Earle produced the best crops. Greenville produced almost nothing.

The extent and condition of the plantings for next year's crop is, on the whole, quite inferior, on account of the extremely dry season. My own planting was somewhat increased and the condition is good, but inquiry among the growers in my vicinity shows that some made no planting, and others have a poor stand of plants.

Very few raspberries are produced in Trumbull county. Some quite large fields in Geauga county. The crop was injured some by the frost, but so far as I know, produced two-thirds of a full crops. Young canes about one foot high were cut down by the freezing, so we thought best to cut them off, when they threw out several shoots from each one, and made a low growth similar to a new planting.

Blackberries were almost entirely killed. Currants the same. We got one bushel and the robins got as many or more. Gooseberries, although they appeared to be about all killed when the frosts were through with them, produced about one-half a crop. Curren and gooseberry bushes made a good growth, so

we are likely to have a good crop next year. Grapes are not grown to any extent for market. Some fruit set and matured after the frosts.

Plums, cherries, peaches, pears and apples were all, or nearly all, killed in our vicinity, so there is little to say about them.

Pear trees have blighted very badly the past season, very many having entirely died out. In my own orchard of some six hundred trees probably from one to two hundred will have to be dug out, and as many more perhaps had better be. Keiffer, Garber, Vermont Beauty, Lawrence and B. de Anjon were not badly damaged. Lamson or Comet only a little worse, while Bartlett, Clapp's favorite, Flemish Beauty and Sheldon are badly used up. These tree are from two to seven years planted, and at time of May frosts were most of them very heavily set with fruit for their first real crop.

Mr. Woodward, of Lordstown, has an orchard, or rather, had an orchard, of several hundred trees just beginning to bear, which he tells me are nearly all ruined. These are the only pear orchards in the county of any extent that I have heard of, but I suppose the trees found in farmers' yards in small numbers have suffered in like manner.

As to the cause of the blight, it is idle to theorize or speculate, unless you are a newspaper correspondent and want something to write, so you can draw your pay, and it would seem foolish for a person to say he knows the cause and proceed to tell it, because some other fellow who is just as sure he knows, would get up and knock his pins from under him in five minutes. Nevertheless, thirty-five years under the tutelage of that sometimes very dear teacher, experience, and thirty-five years of observation, and I have observed many things in those few years, object lessons you know, make me bold enough to say, I know the cause of the blight. Now, don't all jump up at once and ask me to tell it, holding your breath while you wait, because every other fellow knows, just as surely as I, so am not going to tell you, and I will save my pins. See? The nly remedy I can give is, keep on planting as long as your faith and your pocket-book hold out.

With all this dearth of fruit on our own trees, we have not by any means been without fruit. Our brother horticulturists in other parts of this great state and country have not been slow to discover the needy. Consequently our markets have been beautifully supplied with fruit of all kinds, until we, the needy, have well nigh impoverished ourselves trying to relieve our brethren of their burdens. Farm products, except wheat and hay, two staples, have done well, but prices are so low they might about as well have done the other thing, for all they add to the revenue of the farmers. Garden truck did fairly well as a rule. Melons did poorly and celery had a pretty dry time of it, notwithstanding we produced some, without watering, that was very nice. On the whole, we feel thankful that matters are no worse, and as before, live on in hope of better things in the future.

A member: We would like to know something more about the blight. We came here for that very purpose.

Mr. Whitney: I would answer the question, but as the discussion would not be ended until night it would be almost useless to begin it.

The President: The next report will be from New Carlisle, Clarke county, by W. N. Scarff.

AD INTERIM REPORT FROM NEW CARLISLE, BY W. N. SCARFF.

As it is now the duty of the Ad Interim committee to make the report of the Horticultural Society in his ad interim district, I am pleased to report the Miami

County Society in prosperous condition. The membership has increased very materially in the past year and there is a growing interest in the meetings.

The display of fruit, flowers and vegetables at the meetings have been very creditable and add much to the interest, besides are a source of much information in regard to learning the names and habits of different varieties.

As a special incentive for making these displays more complete a number of members of the society have donated collections of choice trees, vines, flowers and vegetables to be given as premiums for best displays made at these meetings.

The work is not thoroughly formulated yet, but is in the hands of a committee whose duty it is to arrange for a special exhibit each month and offer as premium to the successful competitors the articles donated for this purpose.

As is the rule of most county societies, they meet in different parts of the county during the summer months, and the meetings from November to April are held at Troy, the county seat, which is the most central point and easiest of access to the majority of the society.

In our veteran and highly-honored horticulturist, John Pierce, the society has a model president, who is ever alive to the interests of horticulture and leaves nothing undone that he believes to be for the good of the society.

A strong rival to the Miami County Society is the adjoining society of Montgomery county, of which such men as our Hon. N. H. Albaugh and our treasurer, N. Ohmer, are at the head.

As this is in the district represented by Mr. Fred G. Withoff, I must beg the society to pardon me, but I feel it my duty to speak of the great success of their September meeting, at which I was present. This was held at the residence of Peter Bohlender, one of the many wide-awake nurserymen in the Miami valley.

This meeting was largely attended. The display of fruit of all kinds in season was in abundance. A full brass band from an adjoining town was present and was a leading feature to the grand success of the meeting. The program was well rendered and many valuable points brought out in the discussions. If this meeting was a fair sample of the balance of the year there is certainly much credit due the Montgomery Society.

Clark county is without a society. In talking of the matter with a number of its leading horticulturists I find considerable interest and many seem anxious to organize. There is no doubt of growing interest in the matter, and I think it only a question of a short time until this end can be accomplished.

Our reputation in the southwestern part of the state as small fruit growers got a black eye this year, in fact got both eyes black.

The extreme cold winter did us but little hurt, as everything had well matured and the prospects were flattering in the extreme until the late frost, which was the most disastrous by odds of any since I have been in the fruit business.

All small fruits were damaged at least ninety-five per cent. except gooseberries, which gave us almost a full crop. In a few protected localities the frost was not so severe and there yet remained a chance of a fair crop had not the drouth and intense heat followed and continued until what little remained had to succumb.

Tree fruits fared better, in fact we had the largest crop the vicinity has known for years. The absence of codlin moth, curculio and other insects in the early part of the season no doubt this can be largely attributed.

Cherries were the most profitable: as the crop was short other places they readily sold at two dollars and fifty cents to three dollars and fifty cents per bushel. Plums and pears were rather dull sale. Apples being so small, owing to drouth and trees overbearing, were largely converted to cider. Although some fine winter apples were gathered.

It was almost impossible to make any comparison as to the merits and demerits of new fruits this season, as they were cut down so indiscriminately by the frost.

A seedling strawberry grown by S. Buffington & Co., Kessler, O., perhaps is worthy of mention, as it escaped frost and matured about eighty per cent. of a crop, while Lovett, Cumberland, Dayton, Warfield and Haverland under same conditions were, with the exception of Haverland, a total failure. Haverland maturing about fifty per cent. of a crop.

The variety is bi-sexual and a good strong grower, whether it is frost proof or whether the berries were in just such a state to withstand more cold than the others I will not pretend to say. As the variety is at the station perhaps Prof. Green can tell us more about it later.

The greatest acquisition in gooseberries I have seen is that of W. & Y. Ashworth, at Tippecanoe City.

They cannot give a clear history of this new berry, but think it was one of a lot of seedlings they received from Kansas ten or twelve years ago. The fruit is pale green when ripe, same as Downing, bush upright in growth and is a profuse bearer. In order to compare the size with other new kinds I had a sample of Chautauque sent me from Lewis Roesch, Freedonia, N. Y., who is its introducer; as compared with this it was equally as large as Chautauqua, which has the reputation of being the largest gooseberry in cultivation. Messrs. Ashworth claim it free from mildew and that it has not failed to bear a crop since on their grounds.

On spring set plants in comparison of Miller Red with Loudon, the merits are in favor of Miller in color and firmness, besides it is one of the earliest to ripen.

A red raspberry to sell well must have a bright color. This is one great fault of Royal Church. It lacks proper color.

These minor points in successful fruit growing are of the greatest importance. No matter what the quality may be, fruit must be attractive to the eye of the public, or it will not sell. We have in Timbrell strawberry quality perhaps not equaled by any other variety. Yet the one point alone, color condemns it at once. The outlook for a strawberry crop next season is not flattering. The stand in new patches is poor as a rule.

Blackberry plants have made only a fair growth. Other small fruits are looking extremely well, especially currants and gooseberries.

While the profits in fruit growing this season were meagre, yet no one seems discouraged and all are willing to count experience as a part of profit and look for a better return for their labor another year.

The President: Is there any discussion on Mr. Scarff's report?

Mr. Green: One feature that Mr. Scarff and Mr. Whitney brought out was to give us something of an idea of what the stand of plants is for next year. I would like to know something about the new gooseberry, if it is larger than the Stein.

Mr. Scarff: Yes sir, it is a large kind. I was at Mr Stein's place this year, and he claimed it wasn't as large. It was about the same size as the Downing, and that was a fair average size.

Mr. L. B. Pierce: What is the name of this new gooseberry?

Mr. Scarff: It is not named.

Professor Green: Have you seen the Portage?

Mr. Pierce: No sir.

Professor Green: Well, it is very much like that.

Mr. Pierce: It is strange that there should be so many new gooseberries on the market with about the same stripe.

Professor Green: Regarding the Buffington strawberry, I must say I never saw anything very remarkable about it. It was frosted last year as badly as any and the result was that there were very few berries.

Mr. Scarff: I had seen the berry, but I did not think very favorably of it until this year, it escaped the frost almost entirely, and it seemed strange that it should.

President Cushman: If there is no further discussion we will listen to the report of Mr. E. M. Buechley, of Darke county.

AD INTERIM REPORT FOR DARKE COUNTY, OHIO, BY E. M. BUECHLEY.

Mr. President, Ladies and Gentlemen of the Ohio State Horticultural Society:

It is with some degree of reluctance that a small fruit grower comes before you to relate the failures of the past unprecedented dry season. We mention this only as a means to lead us to better modes of culture, and more care in the future in order to overcome as much as possible the inclemency of the seasons. The spring of 1895 opened up with a bright prospect of bountiful small fruit crops of all kinds; but alas! the freeze of last May put a quietus to whatever of hope the grower might have been enthused with. Not only did we lose about all our strawberry, raspberry and blackberry crops, where not sheltered by some protection, but the tender canes of blackberries that were at that time already ten to fifteen inches high, were frozen to the ground to such an extent that we thought best to mow off both the old and the new canes at the ground. I will here add, that the mowing was a mistake, for although we did not get any fruit from either the mowed or the unmowed, the part that was not mowed down made much the better growth.

What the frost left of the small fruit was seriously injured by the dry weather following, so that we had less than fifteen per cent. of a good crop. Pears were plentiful and cheaper than ever I knew them to be; of quinces we had only a few; grapes were almost a total failure, but I am happy to say that we once more have apples to add to our home comforts as plentiful as in our boyhood days; the most bountiful crop we have had in fifteen years, although the size and quality was very materially injured by the dry season.

In this connection I will just add that where I found several orchards that the owners had unwittingly cultivated in growing other crops, they added from fifty to one hundred per cent. to the size of their fruit; had this course been followed throughout the state some one who is better at figures than your humble servant could calculate the results; it would probably reach into hundreds of thousands of dollars; so much for good culture. I will cite another instance that came under my observation this season to illustrate the effect of mulching and irrigation. I had a Lombard plum tree which was quite full of fruit in the early part of the summer, but standing in a stiff bluegrass sod, I felt sure it would not be able to mature the crop properly without some help. I first thoroughly soaked the soil with several barrels of water, and then to conserve the moisture, I covered the soil to a distance of a rod square and several inches deep with a mulch of straw. The result was that I picked from that tree seven and one-half bushels of well-matured fruit that I sold for about fifteen dollars.

If I may judge from my experience in the nursery business the last year, and it corresponds with what a friend and nurseryman of St. Louis writes me a few days ago, there has been a marked increase in the planting of ornamental and shade trees in the cities and villages. There is but little attention paid in western Ohio to planting of commercial orchards of apples, but there are a number of cherry

orchards of some extent that have paid the owners well; and more recently there have been some plums planted. Gooseberries have been planted extensively for the last two years, and no doubt these fruits will be more plentiful in our markets in a few years than we have ever seen them before, but with the abundant means of transportation and distribution I see no cause for fear of overproduction. Even this year, in which the apple crop seems so abnormally abundant, there have been shipped to our little city of Greenville some two carloads of Missouri fruit, and we learn that in southern Missouri and in Virginia, two of the foremost apple-growing regions in the world, that prices are firm at thirty-five to fifty cents per bushel in the orchards.

From present indications I think tree fruits are going into winter quarters in the best possible condition, having their buds well matured and the late fall rains furnishing them with sufficient moisture to carry them through the winter. Raspberries have not been impaired much in their growth by the dry weather, but blackberries are very much stunted in their growth from the combined effect of the freeze of last spring and the drouth. We cannot look for more than a half crop. Strawberries, owing to their weakened condition and poor stand in most fields, will also be a short crop. While the prospects of the fruit grower are none the brightest and most flattering, yet when we look around us and see the reverses of other lines of business it makes us take a more hopeful view of the matter. A writer in some agricultural paper recently stated that of all occupations, the horticulturist was the most successful in his business; that is, a less per cent. of them failed. I therefore, for one, am going to stay with the old ship that has safely rode out many a storm.

Mr. Pierce: There was one point brought out in this paper that I should like to emphasize, and that is the value of the old growth in helping the new growth of raspberries. I noticed this year that where they were frosted most was where they were moved off. It gave serious check to the plant to remove the old canes before they got ripe, even if you didn't get any fruit from them.

Profesor Green: In view of that fact, Mr. Pierce, I cannot understand why it should have that effect, if you moved them off after the frost.

Mr. Buechley: I moved them off after the frost.

Mr. Pierce: My experience in moving off the growth in the spring where they are dormant, has been principally confined to blackberry patches that I wanted to do away with, or wild blackberries in pastures, and the new growth comes up weakened and rusty. It seems to check the plant even in a dormant condition.

AD INTERIM REPORT OF FULTON COUNTY, BY C. H. WAID.

Mr. President and Members of the Ohio State Horticultural Society:

Fulton county, as many of you know, is bounded on the north by the Michigan line, on the east by the fruit prize-taking county of Lucas, on the south by the Democratic county of Henry (I emphasize this latter appellation this fall on account of its rarity), on the west by the county of Williams, which in turn joins the State of Indiana.

Geographically considered, we are away off in one corner, but for general

fertility and diversity of soil, and for thrift, energy and morality of inhabitants, we believe we deserve a place near the top. Extreme modesty forbids further comment on this line.

The rains and the dews, the freezes and the frosts, enter so largely into the measures of every fruit grower's success and failure, that it is not strange that nearly every report is prefaced with comments on the behavior of the weather.

The farmer has long been charged with being a chronic grumbler on this line, but we hope the fruit growers of our state, even though in much greater danger of having almost their entire income for a single year swept away by just one "untimely frost," may yet get credit at the banks and rejoice in the hope that the following year will be one of plenty.

The season of '95 in Fulton county was a remarkable one for its severe frosts in May and for the great lack of rainfall for the entire growing season. On the nights of May 12th, 13th, 14th and 15th there were severe white frosts, with the temperature ranging from thirty-one down to twenty-nine degrees. These wrought the greatest disaster to strawberries, grapes and quinces, currants and gooseberries having passed their tenderest stage, and raspberries and blackberries not being far enough advanced to receive any great injury.

Tree fruits were not injured to any extent. The rainfall for the six months of growing season from April 1st to September 30th was only ten and twenty-six hundredth inches, which was five inches less than the very dry season of '94 for the same period, and less than half the average for twenty years, which is twenty and seventy-three one hundredth inches.

In despite of the very dry season our farmers harvested the largest and best-matured crops of oats, potatoes and corn of any season for a number of years, reminding us of the saying, "Dry seasons scare people, but wet seasons starve them." Several dry seasons in succession have taught our farmers and fruit growers to husband the moisture furnished by the snows and spring rains by frequent and shallow cultivation, and the old deep working double shovel, once so popular, has given place to improved implements that fine the surface, leaving a dust mulch to prevent evaporation.

Our strawberry crop was decidedly variable. Some patches on low ground were so badly injured by frosts that not ten per cent. of a full crop was harvested, while other ground, more favorably located, produced from one-half to two-thirds of a full crop. Prices were fairly good for the entire season. Of the newer varieties, Timbrel was nearly a failure. Greenville hardly came up to expectations, did not surpass Bubach in any respect, while Lovett took the lead of all staminate varieties, closely rivaling Crescent in productiveness. Warfield rusted badly on my own grounds, the first it has shown that weakness in the five years I have fruited it. My planting for main crop for the coming spring will be chiefly Crescent, fertilized with Lovett, with a few rows of Greenville, Bubach and Haverland. The soil I expect to plant in is black sand, from which black ash, butternut and poplar timber was cut. Were I using a different soil my choice in varieties would be somewhat different.

Currants and gooseberries bore well. The frost thinned out just about enough to allow the remainder of the crop to grow to full size.

Cherries bore a full crop and were remarkable for their freedom from worms. I have an argument for the efficacy of spraying that will offset the one so often heard from the man who sprayed once, perhaps in season and perhaps out, may be with the right solution, and maybe not, and then if he failed for any reason to get a crop of fruit, declared that "spraying did not pay, he had tried it."

I have a young cherry orchard of Early Richmond, Dyehouse, Olivet and a few others that I sprayed three times with Bordeaux mixture, with paris green added,

giving the first spraying before the leaves started, the second as soon as the blossoms dropped and the third about ten days later.

In gathering my fruit I found that not to exceed one per cent. had been stung, but to my surprise my neighbors, who did not spray, had fine fruit also. Hence I conclude my spraying sufficed for the entire neighborhood. Is not my argument as logical as his? Is it not probable that untimely frosts, and cold rains often prove "blessings in disguise" by destroying insect pests as well as fruit?

The raspberry is the fruit receiving more attention from our growers than all other fruit crops combined. As there is a prospect of greatly increased acreage in the near future, we await with anxiety the report of Bro. Miller on "Will it pay to evaporate raspberries."

Gregg is the variety almost universally grown, although Palmer, Ohio and Hilborn bring a better price in market, coming as they do a week or ten days earlier. Eureka fruited on my place this season, and I think Prof. Green's oft-quoted prediction, "Early as Palmer, large as Gregg and productive as both," was very nearly verified. Surely, every branch was loaded to its fullest capacity with nice fruit, and indeed, some of my pickers reported that they saw countless numbers of other berries hovering around trying to get on.(?) So far as a single season's test can go, we think the originator was justified in crying, "I have found it."

Blackberries, of which Snyder is the leading variety grown, were injured some by the May frost, but still more by dry weather at time of ripening, leaving less than half a crop of rather inferior fruit.

Nearly every peach tree in the county of sufficient age to bear was loaded with fruit. But few people thought of thinning, consequently there was much undersized fruit, but nice fruit brought one dollar and fifty cents to two dollars per bushel in the orchard.

Pears were so plenty that they were a drug in the market at twenty-five cents per bushel. A few nice-looking Keiffers, that I kept in cool cellar until just before Thanksgiving brought one dollar and fifty cents per bushel. Whether or not the consumer felt any degree of thankfulness toward the grower I have not taken the trouble to ascertain. It seems very unfortunate that so rich a looking pear as a well-ripened Keiffer should be so devoid of high qualities of taste. grapes were nearly all killed while in blossom by May frosts. This did not cut much of a figure in a commercial way, for but few are planted except for home supply.

The apple crop was just about sufficient for home consumption. Many fine specimens were on exhibition at the county fair, but the average for the section, especially in cultivated orchards, were below normal in size.

No new insect pests made their appearance to my knowledge, and the old were not more troublesome than common. The raspberry gall, or black knot, to which I referred a year ago, has not spread beyond the premises where it was found, and the owner is trying to hold it in check by burning diseased canes. Prof. Selby has had the matter under his watchful care, and I am glad to notice by program that he will make a report of his findings at this session.

Our county and the ones east and west of us have horticultural organizations. If by some means the state and local societies could be brought into a little closer communion, I think mutual benefit could be derived. Many of our people await anxiously the issuing of the annual Agricultural, including the Horticultural report.. Think it would be prized much more highly if it were not that it must of needs be "a year old before it is born."

Our cities and towns are filled with a fruit-loving people. Couple with each craving appetite an adequate purse, and northwestern Ohio will obey the injunction, "Feed the hungry."

President Cushman: While we are waiting for Professor Bailey we will take up some of the questions in the question box. Here is one for Professor Lazenby: The question is, as I read it, "What is the best manner of preventing damping off on all trees, plants, etc.?"

Professor Selby: I might give a precautionary suggestion. When there is a beginning of damping off I think we cannot be too careful about taking out the damping-off plant and the adjacent earth, but beyond precautionary measures I have not learned of any very successful means.

Mr. Albaugh: If that is the kind of damp or mold that gets into the cold storage houses or nurserymen's cellars, some of the nurserymen have burned sulphur, and then they get rid of the damp, or probably not the same thing, but the mold that gets into the joints of our apple grafts and into the roots of our plants. We put some sulphur into a vessel, with some fire, put it into the cellar and shut everything up tight.

Mr. Whitney: Sifting perfectly dry dust in and around the plants is said to be of some benefit, but I do not know how far that would work.

Professor Lazenby: Mr. President, I might report as the committee who was instructed to send a word of greeting to the horticultural societies of our sister states, that are now in session, that the following message has been sent to the officers and members of the horticultural society of the state of Michigan: The Horticultural Society of Ohio in session in Canton, sends greeting to the officers and members of the Michigan society. May your meeting be of signal and of inspiring success.

To the officers and members of the horticultural society of Indiana, Greeting from the Ohio Horticultural Society now in session in Canton. May your annual meeting be equally interesting and profitable.

These were signed by our president and secretary.

President Cushman: Ladies and Gentlemen, I have the pleasure of introducing to you Professor L. H. Bailey, who will address us on the subject of orchard management.

ADDRESS OF PROF. L. H. BAILEY.

Mr. President, and Ladies and Gentlemen:

I notice by your program that I am to speak to you upon orchard management. If I were to speak to an audience in New York state I should prefer to speak on orchard mismanagement.

I am going to say a few words this afternoon, by way of preface, about the management of apple orchard lands. I have not come down here with the expectation of teaching you anything, not by any manner of means, but rather that I shall myself, when the discussion comes, be greatly edified by what I shall hear. I always find, wherever I am, all over the country, I carry away valuable information which I could not have gotten at home. The conditions everywhere are so different that the remarks which will apply in one place will not apply in another, and I am coming to feel in the teaching of our students in the agricultural and

horticultural schools, more and more that we must give less attention to the particular details of farm life, and more and more attention to the underlying principles and conditions. I said to a class a few days ago that I had no desire to teach this young man how to hoe turnips, for doubtless he could hoe more turnips in a day than I could, but if they wanted to know anything about the underlying principles of hoeing, and why they hoe, then we could try to teach them. I am coming more and more to believe that what we want in all our agricultural and horticultural teaching, is principles. The people ask why we plow in the fall, or if they shall plow in the spring, or if they shall plow deep or shallow, and I must give them not the principle for their farm, but give them what we believe to be the best principle in general; that is, why do we plow in the fall, or why do we plow in the spring, and why do we plow shallow, and why do we plow at all; and the man himself must be the one, and he is the only one who can apply the knowledge to his own farm. I cannot apply the information which I teach to any man's farm. He himself must do it for himself, because he knows his own farm better than anyone else. So that the application of any principle to any particular farm is a local matter, which a man himself must apply. He sees the farm morning and night and knows its soil, what its elements are, and he is the man to apply this knowledge upon his own place.

A singular fact, when we consider orchards, that they are nearly all sufficiently productive, save only apples, there must be some particular reason why apple orchards do not bear. We are struck with the fact first of all that apple orchards, as a rule are neglected, more so than the plums and small fruit plantations, and the presumption is raised that this neglect must be in some way connected or associated with the declining productiveness of our apple lands. I feel this afternoon as if I should like to give you a temperance lecture, and I think I shall for five minutes. We are always told that liquor lies at the root of all evil. I am going to apply this to the apple orchard; in a way that you had not thought of, and I suppose it will apply to nine-tenths of the apple orchards, certainly it will apply to the orchards of Michigan, New York and New England, and I suppose that it will apply to Ohio as well. Fifty or one hundred years ago, nearly all the purpose for which apples were grown in America was for cider. John Taylor, who wrote his first oratorio in 1811 or 1812 in Virginia, said that apples will make a pleasant food for hogs and also good cider. (Laughter.) If we go into the history of horticulture we find that for the last century, that everywhere apples were grown for the cider. We find records like this: Before 1800 a little colony of forty families in New England, near Boston, made 200 hogsheads of cider. You will find all the old records are full of the cider making idea. Apples were not sold as apples. If they were they were simply drawn off in a wagon box. Now, any sort of an apple is good for cider. Apples which are to be used in making cider do not need cultivation or care, and the trees do not need any particular pruning: so that the reason why our orchards are neglected is because the very first and fundamental idea is that apples are grown for cider making, and there is no particular need of an effort at cultivation. The only reason why our grape culture has taken on itself peculiar features is because that within the last generation it has been imbued through and through with the old European notion that the only purpose of the grape was to make wine. If you were to read early sketches of this country by Captain John Smith and others, you would be surprised to find that they speak of the abundance of wild grapes, and the great amount of wine which may be made from these grapes. John Winthrop was charged a barrel of wine for the rent of Governor's island in Boston harbor: and the Governor of New York issued a decree by means of which a certain Paul Richard was to have imported and exported free whatever he desired, because he was making the wine for the commonwealth. Now the wine and cider idea ran through all the early fruit growing, and you will

find even one hundred years ago elaborate articles telling how to distill wine and cider from wild persimmons. If this was so thoroughly a part of the early mind in respect to our fruit growing, we can readily understand how it is that other kinds of agriculture took on a species of high tillage while fruit growing did not. Another reason is that the apple orchards of the country have lain so long in sod because they have been a side issue, and because the apples were grown for cider purposes. Ordinarily the best land is given to the raising of stock and grain and other crops and to the scheme of mixed husbandry, but a little rocky place about the buildings or back of the barn is laid aside for the orchard, and the culture it receives there was never intended to produce the kind of apples which in these days people desire. So that our apple orchards are not conserving the best interests of the grower in the present day, for we have changed our idea of the purpose of apple growing from the making of cider to the commercial marketing of the fruit itself. I would like to impress this fact upon your minds thoroughly, because you cannot read anywhere in the old literature of agriculture, touching upon the production of fruit, that you do not come upon the idea of wine and cider making.

I am not a professional lecturer, but I simply want to bring these matters to your minds to put you right upon the question of sodding orchards, because, if

I am not a temperance lecturer, but I simply want to bring these matters to grow sodded orchards for the purpose of marketing fruit in barrels is quite another matter. At the present time we need to face about in respect to apple orchards and the management of the apple lands. Persons are frequently asking you and me and anyone else who know anything about orchard management, "What shall I do to make my apple orchard bear?" Now, what is the matter? As a rule the man answers the question himself. We experimenters and teachers and you who have attended these meetings and have more light than the person had about the matter, can tell that man, or lay before his mind, some of the best reasons which may lie at the bottom of the failure of his orchard. You can explain how tillage might have to do with the impoverishment of his land, and the waste of his moisture; and perhaps you can put before him eight, ten or a dozen causes which to your mind are competent, either alone or together, to produce the failure which has taken place in his orchard. He is the man himself who is to find out if he can, which one of these various things is at the bottom of his own particular failure. I do not expect to answer any man's questions as to what is the cause of the failure of his apple orchard to bear. I believe that the fundamental reason, and the one which lies at the bottom of four-fifths of the apple orchards of the country, is lack of tillage. I believe it is the one important thing, and yet I hear people say sodding is the thing for orchards, and they will point to orchards which do produce well, and if they do, I have no contention with the man who owns them, because if I had an orchards are in sod, and the fact that they are unproductive raises the presumption orchard in sod and it produced well I should leave it. But perhaps four-fifths of the that the sodding of the orchard is very largely the reason why apple orchards have not been profitable. It is not simply the sodding of an orchard which is not sodded or the tilling of an orchard which is not tilled that will make it rich in the sense in which we want to use the word *richness* at the present time. It cannot be rich in sod, in land which is not tilled. We know that all soils have a great amount of plant food in them and it may be invaluable to know a great variety of the ways the plant has of unlocking the elements which are there, that by exudation it can dissolve the particles of the soil it wants and take it into its own structure. Let us consider how the tillage of the soil will aid the plant to do this thing. If you take a lump of potash as large as that, the root will run around over the outside of it and will have a foraging ground of about three and one-tenth square inches, but divide that potash up into ten pieces of equal size, and you will have thirty inches of foraging ground for your roots, and divide each of these ten into ten other equal parts

and you will have three hundred square inches of foraging surface for the roots. In other words, fining your soil one hundred times will increase by one hundred fold the amount of potash to apply to the root of the plant. This proportion will not hold everywhere and there is a point beyond which we should not fine our soil, especially if it is clay or argillaceous. I am sure this illustration will fix the matter in your mind, but the tillage has more important effects than this, it seems to me. I suppose that the one great difficulty in our fruit lands, whether of small or orchard fruits, is the difficulty of holding the moisture in them; because it is water which takes it into solution and which takes everything out of solution, the universal carrier, which takes all substance into the plant, and this carrier finally leaves the plant and goes into the atmosphere. The rainfall is somewhat excessive where I am. In New York state it rains from thirty-five to forty-five inches per year; in some parts of our state it has been for some years about forty or fifty inches, in the neighborhood of the lakes, but I think thirty-three inches in the lowest part. But thirty-five to forty-five inches of rainfall for most practical purposes of fruit growing are sufficient, provided the land has been well cared for and the orchard itself has been taken care of from the beginning. I do not believe that you can take all the old apple orchards and make them productive. It is pretty hard to break a horse when he is from ten to twelve years old, and a poor horse he would be when he was broke, so I do not believe that we can make an old orchard productive. I believe that our remedy must be to begin at the beginning of the orchard. I am upon my own place every two or three years setting an orchard, for I believe that apple raising is going to be the most profitable industry we have. I began two years ago to set an orchard, but found I was not ready, and last year I was still not ready, and I am not ready yet, and I shall wait till next spring to get my ground in the condition in which I think it ought to be in order to put out an apple orchard, because I believe I can afford to wait two or three years to get my land in good condition. I shall not subsoil that land. I do not believe it is best for orchard lands. I believe that lands which need subsoiling can be subsoiled by putting a system of tile drains through them and going into the land deep rather than subsoiling the land, because even if the proper conditions are there, subsoiling has only a temporary influence and at the end of three or four seasons it is back to its original condition. This will not apply to strawberries and other small fruits, but for general orchard trees, apple orchards, which are to stay with the land thirty or forty years, I believe the best subsoiling is the tile drain. But I do not mean by this that all orchard lands need tile drains. I want to get my soil in such condition that the roots will go down where they belong, because when the roots of the trees stay upon the top of the soil, or very nearly so, say four or five, or even eight inches, from the top of the soil, I do not believe that we can make that orchard profitable. I was in an apple orchard in New York this past season, which contains about one hundred acres of Baldwins, and the owner asked me to tell him what was the trouble with his orchard. I went with him through the orchard and he said, "I think this variety is very liable to an attack by the apple scab and moth," and this information and that and the other in respect to the cause of the failure of his orchard, but any man could have seen before he went into the orchard that it was no place for an orchard. In the first place it was land which was exceedingly hard and dry. In order to take the spring and fall water off he had plowed between the trees and he had plowed other ditches to carry the water away so it would not stand upon the surface of the land. He had no reservoir for water. Like the man on a heavy clay soil who plows four inches deep, there comes a rain of three-fourths of an inch and overflows. The subsoil below is hard, it overflows, bakes on top, and when the sun comes out it bakes that soil as hard as a rock, and perhaps, if the soil is stiff the water runs off and he loses it. If it is six or eight

inches deep he has double the storage capacity for the water and is able to keep it instead of giving it back again to the atmosphere or cast it out in ditches and surface drainage. He had no storage capacity in his soil, and an inch of rain would have made it so wet he could not have done anything with it. The thing to do was not to subsoil the land, but to drag a system of tile drains through the land so that the water would go downward, break up the soil and give it a storage capacity. He was not storing his water, but lost it, and along in July and August the leaves were dropping from his trees, because they were dried up, and near by there were orchards on which he leaves were in good condition and the apples were hanging well. They had saved the water and used it. I believe, therefore, that before apple orchards are ever put upon lands that have a very hard subsoil, the land should be broken up beneath, so that the trees will send the roots down into the soil. Then, shall we plow the orchard? I do not know whether we shall or not. I do not know that all orchards need plowing. I never expect to put an orchard in sod, although I may change my mind in the future. My present idea is never to put an orchard in sod, especially during the first few years, because I want to plow the land and keep the apple roots down where they belong. By keeping them down deep I can plow the land whenever I desire. You cannot plow the old orchards at the present time, because the roots are so close the top of the ground, and perhaps the orchard has never been plowed and the roots are so near the surface that you cannot even turn the surface over. You want to get the roots down, in the first place, where they belong. I have in press a bulletin in which I have given some illustrations respecting the position of the roots of young trees. It is often said by our pomologists that the roots of apple trees go as far as their tops. If we have a top with a spread of six feet we could have a spread of the roots of six feet also. There were three trees planted in the spring of 1889, which were receiving different treatments, that were dug up this year in the interest of science and the roots investigated. A standard pear tree, which had stood in a hard clay, but which had been very well tilled, had a spread in its top of seven feet, three and one-half feet on either side, and some of the roots, which were about the size of one of these raspberry canes, we traced in one direction twenty-one feet; so that if they had run an equal distance in the other direction the roots would have had a spread of forty-two feet, whilst the top had a spread of seven feet, or only one-sixth as much. Now, this tree was on hard clay not treated to tile drains or subsoiling, but cultivated on top. Now we sometimes think that the more we till land and the more our trees grow, the further apart we ought to put them, but it is quite the reverse. It is in the poorly cultivated and sterile lands that cultivation is needed to find the little *modicum* of plant food, and the tree in the first place needs to be set down deep enough, and we always set our trees deep enough, so that we can plow. We like to have the roots start down three or four inches below the top of the ground after the soil has settled. I made a mistake a few years ago in just such a case in setting a pear orchard, in which I thought I had set the trees deeply enough, but I found in four or five years that the trees were not deep enough, for they seemed to have grown out of the soil two or three inches, or the soil had settled away, and we reset those trees. Another tree set at the same time, was planted in an old garden which had been very rich. The roots of that tree ran only about twice as far as the width of the top, about ten feet. There was good food there and the roots were full of fibres. In this case, although the tree had grown taller than the other, nevertheless we could plant those trees considerably closer together than in the other case, and the roots of this tree were down below the plow. Another tree, planted at the same time, had been kept in sod. We dug it up and found the roots ran for ten or twelve feet in every direction, and all

the large horizontal roots of that tree were not more than six or seven inches, and a good many of them only two or three inches below the surface of the soil.

I suppose if we were to erect a windmill and pump every drop of water out of the soil, we could not do it more effectually than by our system of lack of cultivation. There was the grass which was drawing all the moisture into the atmosphere, and there was the baked soil which was always pumping the moisture from the soil beneath, the roots lying on top of the soil in the driest part of the land, and it is no wonder that the trees in that part of the sodded land began to drop their leaves in early September whilst the ordinary trees held their leaves until the last of September or the first of October. These facts will bring to your attention and illustrate to you the fact that tillage is in a very important sense a conservator of moisture and a means of increasing the fertility of the soil. The principal thing, however, which I wish to emphasize by these remarks is this, that the orchard is very largely determined while it is young. "As the twig is bent, the tree is inclined," and if the orchard is neglected during its first few years, I am doubtful if it can be made to be so good as it would have been if it had been given a better treatment.

Another matter: We leave our orchards so long before we come to the point of doing anything with them. People who neglect their orchards until their trees are twenty-five, thirty or forty years old, after the orchard has been set a generation, have just come to the point of asking, "What is the matter with my orchard?" A man can begin to tell whether an orchard is going to do anything when it is ten years old. A man who has his eyes upon it can tell, when an orchard is seven or eight years old, if that orchard has a future, and he ought to begin right there to study the question as to what that orchard wants. I nearly always say to such a man, "You have simply delayed breaking your horse until your horse is old enough to die, or nearly so, and now you cannot break the horse and make a good horse out of him." Of course, I should try to cultivate the land as well as I could, I might try to prune the trees and spray it, and work along with it year by year and possibly something would come, but I believe the only way in that case is to plant a new orchard and begin all over. I do not believe that we can begin at the back end of the orchard and then try to regenerate it. I do not believe it can be done. I believe that an orchard when it is ten years old should be in pretty good bearing condition. An orchard when it is that age should average a barrel to the tree; when it is twelve years old it should average a barrel to the tree every year from that time on. We have an orchard planted in the spring of 1889 and some of the trees have already produced more than a barrel of apples and they have all received high cultivation; not extra high, as strawberries, but good cultivation.

Now, just a word about top grafting. I happened to be in company last year with some grafters in New York, and with one exception, all the orchards which they were grafting were twenty years of age and upwards. A man who does not find out what his orchard is going to do until it is twenty years old, ought to lose it. He ought to know when it is ten years old whether the varieties are what he wants. Of course you can work it over, but you ought to begin younger.

Now, concerning crimson clover. I presume from your instruction at the state university and experiment station, that you do not need to be told very many of these elementary things, and yet it may be well to hear them from another point of view. I do not know much about your conditions here, but I fear in New York state the winters are too severe for the profitable growing of crimson clover, although through the central and eastern part of the state it is grown to some extent. In our country we do not sow it for forage; it is not worth the cost to sow it for forage. It does not yield enough in the fall or in the spring, but perhaps here with your shorter winters and milder seasons you may use it for forage to a good

advantage. Clover in our country is introduced as a catch crop and to improve the condition of the land. We must remember that early in the spring is the time when we must save the moisture, for it is in the ground and will come back into the atmosphere, but if we begin early in the spring we can save it a little longer. Our trees may spare some of the moisture from the fall rains. We may let a little of it escape, but it should not escape into the atmosphere. We should make it if possible, go through the plant. Crimson clover will take the moisture which the trees can very well spare at that time; they will run their fibers into the soil and add humus to it, and you need a good deal of herbage on it in the fall and winter. I believe that a cover for the trees, the land, is an important thing. It is frequently said that we put a crop on the ground to protect it, to protect our trees. If you mean to protect it from frost, I think the benefit is slight. I do not believe the benefit of a cover on the ground is protection from frost. Ordinarily in the spring we will find lands all run together and it may take a year or two to get them back into a condition in which we can plow them in safety in the fall. I would not have my man plow my clay land this year in which I had beans and potatoes, because it would all run together and become lifeless and dead by spring; but crimson clover on your land has the effect of keeping the surface friable all winter, and as the nurserymen say, your land is alive in the spring. And as you know, the bare lands, after the first few rains and snows upon them, become baked and the water runs off. You have all noticed this after a rainstorm in the summer; upon the hard road the rain falls and runs off at once, and yet if you will go into the adjoining grass land you will find that the water hangs on the surface of the soil for several hours; it is held on the surface and gradually seeps away.

I am satisfied we can increase the amount of moisture in our soil by saving the winter snows and by keeping upon our soil some sort of herbage which would prevent the water from running off. But if we leave the clover on our land in the spring until it begins to blossom we would better never put it on, because it is pumping out the moisture into the atmosphere, the land is becoming baked and hard, and the clover is becoming hard and woody, and a great deal of the moisture is lost. We all make a great mistake by leaving our clover to grow so late in the spring. We ought to plow it under just as soon as the land is fit, before it has wasted so much of our moisture, and while the growth is succulent. Of course, in a wet season this is not very important, because there would be moisture in a season like that that would go down and pass into the fiber which would not be true in a dry season, when there would not be enough moisture to break down the tissue. I have seen so much ill effect of this late plowing that I cannot enforce the thought too emphatically that you ought to turn it under very early in the spring. I do not believe crimson clover is the best thing for every year. I think we shall want a rotation in cover crops as much as in other things, in other years; we better sow vetch or corn or buckwheat or something of that kind and have a rotation, because any one crop upon the land year by year will not give us good results. Now, concerning the depletion of the soil of nursery lands. All who grow nursery trees know that the land which has been treed once is rarely if ever treed a second time until it has rested in clover or something else for several years. The trees take something out of the soil and the condition of the soil is almost ruined for the time being; it runs together and becomes lifeless, and not being aerated and worked does not yield to the influences of the sunshine and water. In most other crops we leave something in the land in the way of herbage, but here is a crop which for years allows no rotation and the land becomes more or less depleted of the humus and possibly it disintegrates and our lands settle down and become hard and lifeless. We have had a half dozen experiments in New

York in respect to fertilizer—potash, phosphoric acid, nitrogen, etc.—and so far as they have gone we have seen no good effects from these fertilizers. What we need on these lands is not potash and phosphoric acid; we need fiber, and we are now trying the experiment of growing between these rows crimson clover in order to add fiber for the growth of the trees. We do not know as a matter of fact that we can put barnyard manure enough into these lands to bring them back into their former good condition.

Another matter with respect to apple trees which I should like to bring up. It will apply to all fruit trees, but more especially to apple trees. I can bring the illustration out better in the breeding of cows or any other domestic animals. If you wanted to breed a butter breed you would not breed from a cow which made one hundred pounds of poor butter a year. You are careful when you breed a mare to take one which stands well in every point, because you have an idea founded upon experience that the attributes of the mare will be carried over more or less to the offspring, and we could not hire you to breed to another kind of an animal. Go into any green house in Canton and ask the owner what kind of plants he takes his cuttings from. Take for instance two hundred different chrysanthemums and you will find some of them do not flower, some varieties that I presume we could not make flower this year. Will we take cuttings from the plants which do not flower, for next year? No gardner would ever think of it; in fact he is so thoroughly imbued with the idea that he must take cuttings from plants which please him that he never thinks of doing anything to the contrary. We take our scions of apple trees from what? From anything that comes along. If it is a Baldwin that is all. We never look at the individual tree, whether we are taking these scions from a Baldwin tree which bears well or from one which does not bear at all; and if you go into a Baldwin orchard of one hundred trees there will be one hundred different kinds of productiveness. There are some trees which bear well and some that do not bear at all. Will you take scions from the trees that do not bear. My father lives in Michigan and was one of the early settlers, and a few years ago some Ohio grafters came up there to buy scions. They came up there because they heard that the orchard was a good one and that the trees were very productive. They were top grafted. They heard the trees were productive and they wanted to get scions from that orchard. The trees were Greenings, an old orchard raised from the seed, and one row had not been grafted, but the trees were allowed to grow and were seedlings. These men were told that they must not take scions from those trees, because they were not Greenings. But they did cut some from those trees and said they did not care, "that they were going back to Ohio to graft in the scions and that they would have the reputation of getting them from a good orchard. I suppose that some of you are trying to get apples from those old trees. (Laughter.) It is certainly true that there are very few persons in the country who have any sort of a system of selection. It certainly does stand to reason that a Baldwin tree which does not bear apples is not the tree from which to take scions. You do not know when you buy nursery stock what kind of a tree your scions were taken from. The tree from which it was taken may develop into a first rate bearing tree. In that case your tree is all right, but it may develop into a non-bearing tree. Whether or not there is anything in this I cannot say. I am not old enough. I do not want to be dogmatic upon the question, but I only want to impress the fact upon your minds, and I am so convinced of it myself that I am going to top-graft every tree on my place, taking my scions from trees which I have known over a period of years.

I do not know whether there is anything in this or not, but it seems to me that there must be some practicability in this sort of grafting of apple trees. If

I could be sure that the nurseryman had taken his scions from bearing trees, I should never go to the trouble of top-grafting my trees, but get them of him. I believe the time has come for the nurserymen to take the matter in hand and to advertise that they do take their scions from trees which they know to be productive instead of taking them from stock they know nothing about. I do not know whether there is anything in this or not, that scions from nursery trees make unproductive trees, but from all I can understand about scions from nursery trees they are just as good as scions from any other kind of trees, only I do not know what their character is. It may, as I say, develop into a good tree and I presume the majority of them do, but until I do know it I shall prefer to have my scions from trees which I know to have been productive.

These are some of the reasons, which it seems to me are at the entire foundation of the unproductiveness of our orchard trees. I do not know that any of them are correct. I simply throw them out as suggestions and am perfectly willing that you should disagree with everyone of them.

I want to say a word further about spraying. I do not wish to depreciate the value of the experiment station, for it would be unseemly for me to do so, because I find they are among those who have tried to make people spray their trees, and yet I do believe it has a tendency to obscure the object of tillage, and if that is true then I wish it had never been brought into use. I should not spray less, but till more and take better care of our lands and trees in every way, for I believe that it is only by good care that we can ordinarily hope to get a crop of fruit. But of course, there may be some fruit growers who want to get a crop of fruit without earning it. You make a great mistake in doing it. It is no credit to a fruit grower to go out now and then and find that he has a crop of apples. Just another word about spraying. Spraying is simply beginning at the further end of the problem. When we have grown the trees and have a foundation then we can help out the production by spraying, but I do not believe the apple grower of the future can expect good crops unless, besides the spraying, all the other work has first been done. He must select the trees and the land, and plant them and till them and get them in good shape, otherwise they are not worth the spraying. So that to say that we can make our old apple orchards productive by spraying is to admit that they have had good care in every direction, but I do not look upon spraying as a means of making apple orchards productive. One reason why they need spraying is because the rotation is so long. I believe that so far as possible we ought to avoid insect and fungus troubles by quick rotations.

Now, I have run over this question in a very desultory sort of way, and it may be that you have some questions that you would like to ask. I thank you for your attention:

President Cushman: Here are some questions which have been handed in for your answers, by members of the society.

Professor Bailey: There are some questions here which the President puts in my hands. The first is: What success has attended apricot growing in New York, and what varieties are best?

Apricot growing has been attended with remarkably good success in the hands of about two or three persons. Chief among these persons are E. M. Smith & Sons, of Seneca Lake, and they are the only persons who have been into it long enough to see that apricot growing is profitable. They have about three thousand apricot trees. S. D.

Willard has had sufficient experience to say that it is possible to grow apricots in New York state with success.

What varieties are best?

This is a great question. No two are agreed on that point. I believe that among the best are the Royal, Smith's Early, and for very early, possibly the Early Golden. This is an apricot of high quality.

Can California varieties be grown? Yes, this Royal is a California variety.

Tell us what you know about the Willard plum.

Well, I would not plant it if you would give it to me, but there is one which is only about a week later, that I would by all means plant in preference to it. It is called the Red Nagate. Now, friends, there are three or four plums which go under the name of Red Nagate: Another that many of you have seen is the Red June. It is almost as large as the Bradshaw, but it is fully ten days earlier. We begin to pick it along in July. This Red June is so much better in quality that I should prefer it to the Willard, although I have seen the Willard at Mr. Willard's place and was very particular to find out all I could about it. Mr. Willard is about done with it. It is very poor in quality. This year we have been trying these Japanese plums, and we canned a bushel of one kind, and my wife told me if I brought any more home she would not have them. I believe in Japanese plums nevertheless. They are exceedingly productive and they are almost free from the black knot and the leaf blight, especially. From what I know at the present time, I do not believe the Willard is a very satisfactory plum for the north. In regard to the Red June, I know that it is the best early plum among the Japanese which we have, although it is too early yet to tell about them year after year, and I should advise no one to plant very largely of them.

When is the best time to prune the blight from our pear trees?

As soon as you see it. If you take it off in the fall it is better than to take it off in the spring. I know of a very interesting and successful plantation of quinces which have been ruined by the blight. I say *successful*, because it has been a successful case of the blight.

Where trees were badly affected in 1894 with black knot, it has spread but little, if any. May this be the effect of the dry weather?

Professor Bailey: Well, I do not know. It may be, it may be that the dry weather has some effect on it.

Would you manage a pear orchard the same as an apple orchard?

Professor Bailey: No, I should not. I should manage every orchard differently. I am quite convinced that I should keep an orchard in tillage, but I might seed it down occasionally, but I should not do so until I had a good orchard. I should keep the orchard plowed anyway three or four years, whatever they were, and then, after that time, if they were

getting too vigorous I should seed it down. Of course, we may till too much. People sometimes feel that if one pill is good, ten pills ought to be better, while it is not always so. We can cultivate too much, but I should rather have a good crop of weeds on my orchard, except for looks, than to have the ground bare, if the ground were clay.

Question. I would like to ask Professor Bailey why he plants Northern Spy?

Professor Bailey: The reason why I plant them is because they are vigorous growers and I get good strong bodies and because I have been taught to do it. I live in Tompkins county; it is the home of the Tompkins County King. I think the original Tompkins County King is a grafted tree. It is now standing, about sixty or seventy years old. Where this tree came from is a very great question. I should say, if some of the Tompkins county farmers were here, that there are at least four original Tompkins County King trees. It is our great apple in all those valleys and on the hills, on the foot-hills of the Allegheny region.

Question. Would you advise sowing rye in vineyards in the fall? If so, what are the advantages? What time should it be plowed under?

Professor Bailey: I do not know whether I should or not! I think I should sow rye. I do not believe I should sow much Crimson Clover in vineyards. It is too nitrogenous, unless we are very careful and the soil is a little thin. We should be careful about getting too much nitrogen in the soil. I think I should like to sow rye and plow it under very early, before it goes to seed. I do not believe, however, there is as much necessity for keeping a cover on vineyard lands as there is on some other land. The ground is more or less covered with the leaves in the fall. Ordinarily we do not cultivate our vineyard lands but very little in the fall and they become weedy. I believe that rye is a good crop for vineyards when you want anything on them at all. It would depend a great deal upon the soil. If my soil would run together and bake I should sow Crimson Clover. As to the time to sow it, I cannot answer for Ohio, but for New York, about the middle of July or the first of August is the proper time to sow it. This is earlier than advised a year ago, but last year we saw so many failures that we are advising an earlier sowing. Our first cutting first came late in September or early in October, and you can figure on that about how much of a growth you want to get.

A Member: Is it necessary to cover it after you sow it in corn?

Professor Bailey: I never had any experience in corn, but Professor Roberts sowed some this year in corn. I never saw it sown and not covered.

Question: Did you ever sow it with oats?

Professor Bailey: No, all I know about it is what I saw in the vineyards.

Question: How much did you sow to the acre?

Professor Bailey: From four to six pounds. That would depend on the size of the orchard. We do not expect to get a very good stand underneath the trees. We have an orchard in which the trees do not now shade the ground and we sow there about eight.

Question: Is it advisable to plant small fruits on land occupied by orchards?

Professor Bailey: I do not think it is injurious. It only needs more cultivation and more food, that is all. One of the best orchards I know of is S. D. Willard's, of Geneva, with whom many of you are acquainted, and he practices a system of horticulture which might be called Willard's system. He had an apple orchard between the rows of which he raised grapes, strawberries, etc. Now as the trees get larger he has to move the grapes and strawberries. He has made a good success of it.

Question: Have you fruited the Abundance, Burbank and Satsuma plums? If so, with what success?

Professor Bailey: If I had to plant one or the other of these two I should take the Burbank, but I should prefer to plant some of both. The Abundance rot very badly. They come on while the early peaches are in the market.

Question: Have you had any experience with the Satsuma?

Professor Bailey: Yes, it is a late keeper. I do not believe it can be beat very much.

Question: What is the effect of moving off one year planted raspberry canes in early spring?

Answer: I never did it; I do not know.

Question: Do Kieffer pears usually turn black soon after ripening?

Answer: Ours do not, if they ripen in bulk. They are very edible. I had Kieffer's this year which were almost as good as Bartlett's. I never saw them turn black.

Question: Does an apple or peach contain within itself the germ of decay, or is decay caused by atmospheric influence?

Professor Bailey: That is a pretty tough question. Now, we suppose that all decay is due to germs, or bacteria, and yet we do not think that fruit contains the germs of decay, and yet if there were no germs present and evaporation were entirely stopped, and then some liquid were put over the fruit which would keep the juices in it, I presume that fruit would keep forever. I do not think there is any bacteria or germ that would damage it.

Mr. Ohmer: What is your method of preventing plums from rotting? I have a plum tree on which the plums decay very badly, and I asked the question before you came in here, but the answer was not satisfactory.

Professor Bailey: I feel very loth to give advice down here in Ohio, as Professor Green and Professor Lazenby are here, and some of the best work done in the United States has been done in Ohio, and I feel very diffident about giving advice about these things. I will tell you our own practice only. The Abundance rot very badly and also the Lombard. The first thing to do is to try to keep the tops open. We do not neglect our plum trees after they come into bearing, and the rot does not extend from fruit to fruit. And then, we spray largely with the Bordeaux Mixture, and if we are sure of anything we are sure we can prevent, to a large extent, the rotting of our plums. Two or three years ago we lost plums by rot on every tree except those we sprayed, and last year and this the same on the German Prune, but the Bordeaux is a pretty good specific.

President Cushman: We will now vary our program a little and listen to a recitation by Miss Allie Heldenbrand, entitled "In Texas, Down by the Rio Grande."

The recitation was delivered in an exquisite manner by Miss Heldenbrand and the audience was much pleased. A vote of thanks was given the young lady for her favor.

A Member: I would like to ask Professor Bailey what variety a Wild Goose plum, which is not near another plum and which does not bear fruit, might be crossed with in order to fertilize the blossom?

Professor Bailey: I should say the Miner in a good many instances. We have done pretty well with the Newman, but the Newman is a little tender as a rule.

President Cushman: I know you are getting tired, but we have considerable in our program, and as we do not come together but once a year and there are yet many good things to hear, we will proceed, and listen to Professor Selby on peach yellows in Ohio orchards.

Professor Selby: I want to disabuse your minds at the outset of any possible idea that may arise concerning the sufficiency or thoroughness of my knowledge on the subject of peach yellows. So far as my own attitude is concerned on this subject I believe we have thoroughly reliable American authority, and you will find that a good share of what is repeated here and quoted from that authority, is quoted for the reason that it is given better than I can give it.

PEACH YELLOWS IN OHIO ORCHARDS, BY AUG. D. SELBY.

The disease called yellows in peaches is well known; its fatal inroads among trees make its occurrence a matter of solicitude. The extent of this disease may now rightly occupy the fruit growers of Ohio, more especially since our knowledge upon the subject heretofore has been very limited and equally indefinite. One year ago reference was made to this indefiniteness¹ by stating that portions of the state are included in a distribution map of peach yellows published by Erwin F. Smith,² but exact information of its occurrence at given places is wanting.

As a result of the operation of the black-knot-yellows law, enacted in 1893,³ and of inquiries made by the station botanist, the past year has brought out the actual facts concerning peach yellows, much more clearly. The tendency, as with all new dangers, has been to handle the subject carefully and to make admissions tardily where yellows have appeared. One or two places have shown a disposition quite the reverse; the yellows was admitted to be present and efforts were made to hold it in check. This seems to work more satisfactorily to all parties concerned; the nature of the disease, indeed, demands just this procedure. I think, therefore, that the chances for any misunderstanding as to means and ends, will not be great. It would seem that the information thus far collected should be published. This is the plan that has been decided upon, after due consideration.

APPEARANCE OF YELLOWS IN OHIO.

It may be that peach yellows has scarcely been absent from the state, in a long period of years. The recurrence of outbreaks of great virulence in localities where it has been known all the while (after the manner of pear blight among us the past two seasons) might easily be taken for a new outbreak or appearance. No attempt will be made now to cover this point, each one can satisfy himself, if he likes, with regard to his own district. Yellows is reported to have first appeared in Belmont county, Ohio, in 1849,⁴ and to have prevailed for at least two years.

I have not yet had opportunity to visit this region and can say nothing from personal observation, as to the presence or absence of the disease where it then appeared. A later appearance in the lake belt can be connected with present facts.

The late H. G. Tryon, of Willoughby, O., writing in 1887 to E. F. Smith⁵ states, that the disease first appeared there in 1869 and has continued up to the present writing. On a visit to Willoughby early in November, I found peach trees still suffering from yellows—some even with many blooms November 1st. Yellows trees were seen two miles east of Kirtland and more plentifully at the point of first occurrence near Willoughby. From 1879 till 1895, a period of 16 years, the disease has continued at this point in Lake county; the peach industry seems to have fluctuated independently of the presence of yellows. No yellows was seen farther east than the point named, although search was made at three other places.

¹Preliminary notes on diseases of the peach, 28th Report Ohio State Horticultural Society 1894-5, p. 95.

²Farmers' Bulletin No. 17, U. S. Dept. Agriculture, 1894.

³Ohio Laws, Vol. 91, p. 108-113.

⁴Report of the Commissioners of Patents Agriculture Washington D. C., 1851.

⁵Smith, Peach Yellows a Preliminary Report. Bull. 9, Div. Bot. U. S. Dept. Agriculture, 1888.

In the vicinity of Clyde, Sandusky county, yellows appeared about eight years ago. The loss of trees is now going on at a high rate apparently; the real annual loss is yet difficult to determine, until the affected trees are once thoroughly removed and burned. The operation of the law seems to proceed with fair results, as nearly everywhere the orchard owners have yet to learn the value of promptness in dealing with yellows. Yellows prevails in certain orchards northeast of Clyde to the Erie county line.

Trees suffering from the same trouble were seen in the western portion of Erie county, southwest of Castalia, but not immediately about that place. Diseased trees suffering from yellows were also seen near Elmore, Ottawa county. No well-marked cases have yet been observed by the writer, in the peninsula and island region of that county. There seems no sufficient ground, however, for relying upon any particular location or treatment to give immunity from yellows, and care and watchfulness are the probably price of reasonable freedom in that favored region. That yellows is now present in the peninsula is quite within probability.

About Berlin Heights, Erie county, yellows appeared in 1888 or 1889. Many of the peach orchards of that section have since succumbed, partly through yellows and partly through neglect following discouragement. The fruit commissioners have there been appointed and the work of thorough removal of diseased trees may soon be reached. Observations at Berlin Heights in August last may be worth relating.

The old neglected orchards are succumbing rapidly. Where the commissioners had marked diseased trees for removal in 1894, a very large number were observed in 1895. The symptoms indicated both first and second or even third year of attack. Such orchards show great variations of foliage and the yellow color of leaves. In a five-year orchard under excellent care and cultivation, first-year cases of yellows were found; the symptoms included water sprout, wiry twig growth in one or two cases and premature fruit in all. The appearance of foliage was healthy and vigorous and bright in color, except on the water sprouts mentioned.

From the foregoing statements and from the map shown you will perceive that yellows is an Ohio problem, as well as one for the peach growers of Michigan, Delaware, Maryland and New Jersey. Naturally at this time, there is some indifference in districts where yellows prevail, also some inattention. This will be likely to continue in inverse measure as the urgency of destruction is presented by the horticultural press, or immediately by the fruit commissioners of particular districts (townships). Information from every portion of the state, concerning yellows, will be gratefully received. I feel that much good may be done by the members of this society, both in the way of extending information of yellows and in disseminating right notions concerning the treatment of diseased trees. The map will show yellows distribution in 1895, in Ohio.

SYMPTOMS OF YELLOWS.

In spite of the inadequacy of our knowledge as to the cause of yellows or any cure for the disease, the recognition of the symptoms is not especially difficult. Whenever yellows appears in or near a grower's peach orchard, it becomes his duty as a citizen, as well as his best business policy, to learn to recognize these unfailing indications of the disease. In the premature ripening of the fruit WITH HIGH COLORED MOTTLING OF SKIN AND MARBLING OF FLESH we have the first symptoms for bearing trees; trees ripening the fruit prematurely from any other cause lack the mottling and marbling characteristic of yellows. The flavor of the yellows peaches condemns them, and anyone with slight ex-

perience can recognize the yellows in the packing-house, on the market or when served fresh upon the table. If only a branch shows yellows fruit the whole tree is doomed,⁶ and should be promptly taken out and burned.

The second symptom of yellows, in the ordinary course of the disease in bearing trees, and the first in those not bearing fruit, is the premature (?) growth of winter buds or growth of incipient buds apparently adventitious. This growth begins in September or even earlier, and continues till winter.

During October and early November of the present year, this has been observed in all yellows districts visited, and has proved of great assistance in the labors of fruit commissioners. It is stated by Smith⁷ that this premature shooting of buds may occur in spring but slightly in advance of normal growth. In fall the absence of the usual winter preparation of definite ripened growth, can scarcely fail to attract attention. The appearance of blossoms in November is a symptom that accompanies shooting of other buds. This premature blossoming may also happen in spring. One of the phases of premature development is the growth of wiry shoots and branches. These may spring from the trunk or larger branches, as is usually the case in the earlier stages, or may come from the smaller branches toward the outer portion of the top. The latter, most frequently at more advanced period.

WHAT COURSE TO PURSUE WITH YELLOWS.

No cure for yellows is known. Trees once attacked perish after a longer or shorter time. The disease is conclusively shown by our American authority to be contagious.⁸ The method of dealing with yellows is, therefore, plain; namely, to dig out promptly and burn all diseased trees. I would like to emphasize the value of promptness in this work. The contagious character makes early removal necessary. A tree should be marked when the first reliable symptoms are observed, but while marking may relieve one's conscience, nothing short of digging up and burning will relieve the danger of spread from the tree or trees in question. In destruction of affected trees it seems best to burn them as near where they stood as possible. Dragging diseased trees through the orchard appears to be a source of infection.

Care in pruning would appear very important also. Some men assert that the tools spread the disease. This claim is denied by others. All are agreed that prompt removal is a first requisite. At South Haven and other points in Michigan the practice of replanting, after diseased trees the following spring, is quite generally followed. Thorough removal of roots, open hole during winter and as large a change of earth as practicable, are usually sought where this is done. Some of these replant trees succumb to yellows, but it is asserted on good evidence that they are less liable than surrounding trees. The great advantage of a fairly full stand of trees can not be overlooked in considering the question of replanting.

WHAT OF YELLOWS FRUIT?

Yellows fruit is unfit for sale, if looked at from standpoint of quality, of business policy or of public welfare. I believe that we will reach the point when selling the yellows fruit will be a rare practice. "Those who play with the fire are liable to be burned," is a maxim always applicable in contagious diseases; we must care for all points to make our labor avail us.

⁶Smith, E. F. Bull. 1, Div. Veg. Pathology, U. S. Dept. Agriculture, 1891, pp. 15, 30 and 44.

⁷Smith, E. F. Bulletin 1, p. 14.

⁸Smith, E. F., in all bulletins named. 1888, 1891, 1893.

HOW YELLOWS IS MOST LIKELY TO SPREAD.

One's first thought under this caption would be by proximity of diseased trees. This is, in general, the case. The spread from given centers takes place in this way very largely, but not entirely. A much more rapid method is that of budding with diseased material. The instances are numerous where premature yellows fruit has served to make a tree, a source for scions. Buds from the healthy portion of a diseased tree, with single branch affected, have been shown to inoculate the trouble. While not shrinking from a discussion of the whole nursery side of the



MAP SHOWING KNOWN DISTRIBUTION OF YELLOW IN OHIO IN 1895.

yellows spread question, an extended talk upon it does not seem necessary. Stock grown alongside of yellows trees would surely be exposed to the dangers of infection. Fruit from yellows trees would also carry the contagion and the possible danger through pits has led to the general use of Tennessee seeds. As I have seen nursery stock grown, the danger from yellows in that manner would be certainly the very slightest possible. The reverse is also true and the purchaser must exercise business judgment in selection of stock.

The effect of yellows on the development of the peach industry is likely to be remote; the immediate influence outside of a few places, should be slight. It is extremely questionable whether yellows will prove, on the whole, equally destructive with the borers. The borers we have with us always and count on annual losses of trees from them—the same attitude toward yellows with the greater carefulness emphasized, is the most reasonable position upon this matter, as it seems to me, for Ohio peach growers.

THE YELLOWS STATUTE.

Locally the "black-knot-yellows law" has failed to go into effect despite the efforts of freeholders; no one who would give the bond required being willing to serve at the compensation named. Whatever amendments may seem advisable are within the premise of this society to discuss. In any event, it promises to be a part of the work of the experiment station to give expert advice when called on, and from these calls there is no disposition to shrink. It is quite possible that examination by the station horticulturist or botanist may facilitate greatly the operation of the statute. It is for those who are directly called upon to bear the losses from this disease, to draw up methods of action, utilizing within their judgment, the sources of assistance available.

President Cushman: We will take up these questions that have been handed in. Here is one which is a little peculiar to come up before this society: Can a sugar orchard be made profitable? If so, how long would it take trees to grow large enough to tap? And how many should be planted to the acre? Mr. Sweet, that is a sweet question, and we would like to have you answer it.

Mr. Sweet: I am not in the sugar business.

Mr. L. B. Pierce: I have a row of trees in front of my house that have been planted about twenty-five years, and my boys have been tapping them in the spring for the last eight or ten years. They are not very large yet, not more than eight inches in diameter at the base, but the production has not been very great. Sugar orchards, to be productive, that is, to be of any great value, must be from thirty-five to forty years old.

Question: What three varieties of peaches are most hardy in bud, one early, one medium and one late variety?

Mr. Miller: I think there is not much difference in hardness of the early cling-stone varieties, such as the Alexander and the Waterloo and that class. They are all very hardy and will stand more severe weather than many of the later varieties. We consider the Chili one of the hardiest of medium varieties.

Question: Can hyacinth bulbs be grown successfully in this country?

Mr. Crawford: I believe it is generally held that hyacinth bulbs cannot be successfully grown in this country, but I know a man who has had excellent success. This fall I purchased a lot of his one and two year old seedlings, so I know they can be grown successfully here.

Question: Have you fruited the Abundance, Burbank and Satsuma plums? If so, with what success?

Professor Green: I have not; the Abundance were all killed by the frost.

Professor Lazenby: I might say in that connection that these trees are growing on the University grounds, planted there by the experiment station, and while the trees have made a satisfactory growth we have had no fruit although they have blossomed now for three years.

Question: Owing to the liability of more violent changes of temperature since the destruction of our forests and the consequent danger of frozen sap blight, is it advisable to plant commercial pear orchards in north-eastern Ohio?

Mr. Woodward: I would like some information on that subject. I have a pear orchard of about one hundred trees that are blighted until they are dead and gone. As to whether I shall set any more I do not know. There are several other orchards in our vicinity that are in the same condition. Perhaps we had better profit by Professor Bailey's advise and not plant any trees.

Question: As the past season has been unusually dry and I am anxious to know whether irrigation has been resorted to. And should not irrigation receive more attention from horticulturists?

Mr. Jenkins: I have had considerable experience in this matter of irrigation in a very small way and it is important that it should be taken hold of understandingly, for irrigation takes an immense amount of water. I use a part of the ground that is in my nursery for raising cuttings, and by simply damming up a stream that runs through that part of my grounds I could run the water through the rich soil there, and this was unusually done in open channels, and I have had no reason to change that plan, although I have experimented a little by putting in under ground drainage between the beds, running channels on each side of the beds probably on an average of twelve feet wide. This stream, by simply damming it up makes an endless supply of water. You can run the water through these beds in seasons like the past one, for hours and hours and still it drinks the water up.

Mr. Pierce: You tried the underground plan?

Mr. Jenkins: No; I am speaking of the surface plan. It takes a stream of water running quite a while to saturate the ground.

Professor Lazenby: What is the nature of your subsoil?

Mr. Jenkins: There may be something in that. The subsoil is quite a distance down. It would not be saturated as quickly as it would where there is herbage upon it. The benefits this year from irrigation were shown immensely. For instance, in strawberries, I planted a number of varieties and they multiplied immensely. I never saw so many plants produced.

For instance the Brandywine have grown so and covered the ground they would astonish you, and the Eldorado blackberry has grown immensely and every cutting seemed to grow. This of course has been an exceptional season, at least with us in Columbiana county, and a great many things that have grown on upland have not done very well on account of the drought. I have great faith in irrigation where it can be brought about. It seems to me that over different parts of the country it is so easy to get level grounds and grounds contiguous to streams, that irrigation could be very easily accomplished.

Mr. Pierce: On Mr. Gault's farm which I visited at Ruggles in Ashland county, is a very deep narrow ravine: The land is quite hilly and there are three runs running out to the ravine, and he figures that he can save in the winter rains and snows two million gallons of water in a reservoir and can flood ten acres easily and thirty acres by carrying it in a pipe sixty rods. He thinks the spring would make up for the evaporation during the summer. It is a magnificent site for irrigation and was created at a very little expense. It is red bottom land that can be irrigated. It is six miles from a railroad and ten miles from any good town. Ashland is some six or eight miles away. The question is, what can he raise that would pay? Water would not be absolutely necessary more than two years out of five. I know of no line in all the nursery business that would warrant his trying the experiment of irrigation at this distance from market. You can afford to put in a good deal more expensive plant right close to a good market, than you can, even if you can get your water for little or nothing ten or fifteen miles from market. There are a hundred places in Champaign and Logan counties where springs come right out on the top of the ground, and in some places you can irrigate fifty acres of ground from one artesian well, but there is no market in these localities for very much that can be grown. In the second place it will not pay to irrigate everything. I don't believe it would pay to irrigate orchards in ordinary lands unless the water is furnished very cheap. And then there is another point, that this is not a dry climate in the sense in which California and the south-west are dry climates. We do not have to go three or four months without rainfall.

A Member: I do not believe it pays in a majority of cases, but I do know of a number of cases where it does pay, these are crops of especially high values. I know that celery can be irrigated to a great advantage, but I do not believe a man can figure it up and make any money out of it in the general fruit business of the country. We should look at it in very much the same way as we do subsoiling. We know it is a benefit, but, does it pay? Ordinarily it is the cheapest to put in tile drains, and for general purposes good deep tiling and judicious cultivation is the cheapest kind of irrigation.

Mr. Pierce: I beg to differ on that point. I think that a sixteen-inch loosened soil is preferable to draining. Don't you get the benefit of the loosened soil to that depth?

Professor Bailey: I am glad you made that point. I remember I said in my remarks this afternoon, I spoke of subsoiling for plants for rotation. I had more particular reference in that to orchards where you cannot subsoil but once in the lifetime of the orchard. In those cases in which the subsoil goes back very soon into its original condition, for instance, with strawberries and other things of short rotation, you can subsoil very often.

Professor Lazenby: There is one point in this connection, although perhaps it has no direct bearing on the question of irrigation, that I would like to ask Professor Bailey while he is speaking, as he has referred to the importance of tiling in orchards, at what depth, as a rule, he would put his tile, especially if his land was inclined to suffer from drought. My attention has been called to this during the past two summers, and I have found that while the tiling of the land should be to remove surplus water and that some appear to favor shallow tiling in seasons of drought, we would get a great deal more moisture in the ground where the tiling is deep. In our own ground where we have some tile that have been placed twenty, twenty-four and thirty inches deep, during the dry summer it seemed that everything was almost burned up. But on the other hand in the same soil where the tile were three feet deep things did not suffer very much from the drought; the air seemed to penetrate it and cool it, and there was moisture.

Professor Bailey: It would depend a good deal upon the soil. My own notion and practice is and has been upon ordinary level and sloping land to put the tile three and one-half feet deep and sometimes four feet deep. We have often tilled land which had no draining. I had a piece of clay land of which we were obliged to take off six and one-half feet of the top earth, and the bottom was dark clay. We put two spans of heavy Percheron horses to the plow and subsoiled this heavy clay land, and then went to work and drained it, and you would be surprised to see the benefit that it produced. It prevented the soil from baking and running together, and that is one of the great advantages that come from tiling, to prevent the soil from running together and keeping them more or less friable.

Secretary Farnsworth: In laying tile in my orchard I aimed to put them down three or four feet deep and in going through ridges we had to cut deeper, and I know that a great many of my farmer friends thought I was going to an unnecessary amount of labor, claiming that the water would drain off quicker where the tiles were laid $2\frac{1}{2}$ feet deep or possibly three feet. Perhaps it would, but that was not my object. I wanted a reservoir to hold a sufficient amount of moisture in the soil and to have it retained without becoming saturated.

Professor Bailey: That is the whole essence of tile draining. We do not want to get rid of our water because we have not water enough. We simply want a reservoir three or four feet deep where we can keep it, and if we ditch it we lose it.

President Cushman: I do not think we ought to give further time for discussion now. It is getting towards the time for adjournment, and if we expect to get back on time this evening I think we ought to take a recess until seven o'clock this evening.

And thereupon, on motion a recess was taken until seven o'clock P. M. of same day.

EVENING SESSION.

At seven o'clock, pursuant to adjournment the convention was called to order, with Vice-President Professor W. R. Lazenby in the chair. "There are a few questions in the question box, which the secretary will read."

The Secretary: The first one is this: Are the American varieties of plums of value where the Europeans can be grown?

Professor Bailey: I should say no, unless possibly for canning purposes.

Professor Lazenby: I would like to say that where the European cannot be grown here they might prove extremely profitable. I think our native plums have all failed for the last two years and at Columbus we have been unable to raise any European plums.

Professor Bailey: Are you too far south?

Professor Lazenby: Well a little too far south.

Professor Bailey: You are a part of this interior plain?

Professor Lazenby: Yes sir; at the junction of the two rivers and the frosts there are unusually severe.

Professor Bailey: Interior countries are too dry for successful plum growing.

Professor Lazenby: We will now listen to the annual address of President Cushman,

ANNUAL ADDRESS OF PRESIDENT CUSHMAN.

Members and Friends of the Ohio State Horticultural Society:

It gives me pleasure to call this society, in this enterprising city of Canton, at the invitation of one of the largest, wealthiest, wittiest and most intelligent societies of our state. I have carefully noted the reports of the proceedings of the society whose guests we are, and have had the pleasure of a handshake with your president and secretary; and so I have known from the very outset, that this, our twenty-ninth annual session, would eclipse all others.

I believe this is the second time our state society has ever met in your city. We have expected to come for some time: and we are here now, in response to your cordial invitation, and we hope that this meeting may be a help to you all—in increasing a love and respect for your art, your society and our state society.

When we convened this morning, Stark county was second in membership in our state society; we hope that before its adjournment, it will be *first* by a large majority, and that your society will be the gainer.

We have just passed through a season unparalleled for frosts and drouths, for successes and failures, a history of which you have been made thoroughly acquainted with, by our ad interim reports. I will not speak further of them.

The changes made in our methods of expending our funds at the last annual meeting deserves more than a passing notice. You all should know, the two most important changes, were the holding of a second or winter meeting, doing away with the summer meeting, and discontinuance of premiums for displays of fruits, etc., at the annual meeting.

In accord with this arrangement, a meeting was held at Toledo, Ohio, on the 20th of February, 1895. The proceedings of this session are before you, in the report. It was well attended, and interest and information developed to the greatest extent.

As it is not possible to secure a large attendance of horticulturists in the busy summer season, perhaps this February meeting, coming as it does, at the beginning of the year, is the best time.

However, I doubt the advisability of holding two meetings of this society so close together, and the consequent expenditure of our funds. In these days of "Farmers' Institutes," experiment stations, together with our excellent rural press, it is difficult to form a program that will hold the respect and demand the attention due to the sessions of this society. If it is to spend our funds for horticultural meetings, I am strongly in favor of concentrating our efforts in one meeting, and making that the event of the year.

I believe there are a number of ways we can use our funds that would secure interest in our society better than the mere holding of a second meeting in the winter season:

First, *add* a day, and otherwise improve our annual meeting; second, increase our efforts for local societies; third, offer medals, certificates, etc., for meritorious displays of fruits and new varieties.

It might be advisable for us to offer premiums for the best written papers on topics of horticultural interest—said papers to be the property of the society, which could be used in our reports. There are a variety of ways in which we could use these funds, which would elicit a wider interest, and thus advertise our society.

The discontinuing of premiums for exhibits was adopted largely because a number of parties mis-used the opportunities which these displays offered, taking large amounts of money from our treasury, and not giving the society the benefit of their attendance and experience: although this was not as it should be, I hope the offering of premiums may be wisely reinstated in the near future.

Of the work done in compliance to the report of the committee on plans for our society, made at the February meeting (page 284 of report), I am glad to say some progress has been made. Horticultural institute work this winter will be an acknowledged feature.

The organization of county horticultural societies has received some attention. Mr. Aultfather (with the assistance of Mr. L. B. Pierce and myself) has put this branch of the work in motion in Columbiana, Cuyahoga and Carroll counties—thus adding about one hundred growers to horticultural organizations. These societies may need the support of this society until they fully realize the benefits to be derived.

This meeting presents the first opportunity to carry out in part the third recommendation—illustrating lectures and illustrating of our reports.

The fourth recommendation—that of securing state members, is a standing one, and needs no account.

The dissemination of knowledge of the workings of this society, as provided for under the fifth recommendation, has not been put in any definite form. I believe it could be carried out with good results, and hope it may be accomplished in the near future.

The knowledge of the existence of the San Jose scale on one or two orchards in Ohio, and its probable introduction on nursery stock, together with the constant addition to the list of foreign insects which are invading our territory and destroying our plants, brought to my mind the necessity of laws which would aid our growers in preventing their further introduction and distribution.

In accordance with this idea, early in the year, I appointed a committee, consisting of Profs. Lazenby and Webster and O. W. Aldrich, to look up the subject, and report at this meeting, their findings and recommendations. I bespeak for this report your most careful consideration: for on its final disposition depends much that interests both amateur and commercial growers.

Our legislature passed a law in 1893 known as the black-knot-yellows law. The horticulturists have had two growing seasons to test this law. Its intent and purpose is a good one, and this society should use every power it possesses to see that its provisions are carried out. If it has weak points, let us discuss them and see that they are remedied. It is important that we know at this meeting just what is being done with this law in different parts of our state.

I think it advisable that our annual reports contain copies of all laws which directly affect horticulture, that we may have them for ready reference.

Enforcement of laws against fruit-tree diseases and injurious insects, effect the financial interests of every commercial horticulturist, and to this interest we must appeal for their enforcement. They must be aroused and shown wherein the danger lies; then by concert of action, brought about by our local and state societies, we may be able to cope with these enemies which are assailing our plants on every side. Our horticulturals are just the organizations for studying, teaching and developing the public sentiment, which will be necessary to properly enforce such laws. This work alone, is reason enough, for the existence of this and kindred societies.

But the commercial interests are not alone in the warfare against insects and disease; every owner of a tree should be enlisted to help make it impossible for our foes to gain and maintain an entrance. Indeed, it is the door-yard and kitchen garden that will be most liable to suffer.

Their owners will not prepare to fight the enemies as will the large commercial grower. They will lose their pet plants, and by their passivity, harbor breeding places for disease and insects.

The time must come soon when laws will be enacted against the introduction and harboring, both insects and diseases, dangerous to plant growth. Man and his animals are protected—quarantined against infectious diseases—why should not his plant property be as well guarded by law? If this society should be instrumental in bringing about such law and public sentiment, it will have paid an hundred fold the amount of its appropriation.

Ours is a common cause, and to bring about the work we are seeking to perform it is necessary to work every interest that depends upon the horticulturist's art. We must do everything in our power to engage the attention of cottager and

commercial grower, plantsmen and dealers, manufacturers and transporters—all must have a common interest in our calling. Ours is a council where we meet for mutual benefit, and to help our fellows to the knowledge it has cost so much for some of us to obtain. I know of no other organization which so freely dispenses its methods, and at so little cost. Everyone is welcome to membership; by uniting with us you will emphasize your efforts and interests, and help to fortify your occupation against all manner of encroachments. Try working for a large membership, both state and local—you will be able to communicate with large bodies of the craft, effectively and on short notice.

The organizing of local societies will be the cheapest and quickest way to reach the mass of growers. If we could put some one on this work who would be willing to work for moderate pay—work in conjunction with the help of the ad interim committee, there could be organized a number of societies in the coming year. It would facilitate the organization of local societies, if our reports contained a draft of constitution for such societies, thus saving much valuable time at their organization and putting each on a similar basis. I hope you will give this line of work your further consideration.

I would further recommend, as a means of obtaining membership to the society, that all papers and other matter of public interest, as far as possible, be withheld from the public press and printed first in our reports.

It must be evident to everyone that the mass of horticulturists will not pay one dollar for membership in this society, when they can get all our report furnishes in the weekly farm paper, and that too, long before our report is out.

This brings us to that other vexed question—the long delays in printing our reports. This question of the early printing of our reports has been a knotty problem ever since we became the "Ohio Horticultural Society."

I have asked Mr. O. W. Aldrich to ascertain if we can lawfully print our reports *when and where* we please. (?) He has kindly assented to do so, and report at this meeting. If we could get our reports out by the first of April they would be in the hands of members and they could get the good of them the coming season. In horticulture, as in the commercial world, knowledge must be fresh in order to be valuable.

The publishing in our reports, of carefully arranged fruit tree lists, suitable for the different sections of our state, would fill a want and be the means of answering questions so often put to the rural press and individuals. This feature formed a part of the work of this society in its earlier days. If thought advisable, this list might be made to cover some of the small fruits.

I would call your attention to the possibilities of making the horticultural exhibits at our State Fair more intelligible to the interested spectator. The arrangement as it now exists is for the competitors and not for the public education. No one can tell by a glance at the tables whether a variety of fruit on exhibition is valuable or worthless, whether it thrives best in the northern or southern part of our state, whether it does best on heavy or light soils—and many other points of like interest.

If each variety of fruit on exhibition, listed and approved by this society, could have a card on it, giving its strong and weak points, etc., it would be giving an illustrated lecture in horticulture of the most valuable kind.

I think our State Board of Agriculture would be only too glad to co-operate with us in this, or in any other way, which would increase the value of the exhibition.

I would call your attention to the advisability of rearranging the varieties on the premium lists, and would suggest that this society confer with the State

Board upon matters of horticulture, as there are, no doubt, other improvements that could be made.

The cause of Ohio horticulture has been favored at our fair, by having a member in charge who has been ever active in our society, and a successful and enthusiastic grower.

He deserves the thanks of this society and the horticultural interests of our state, for the kind, courteous and impartial treatment accorded to all.

This society through its members and officers, should do all in its power to support the department which represents it. It has been stated that there are a large number of amateur horticulturists in our state, who are far eclipsing the commercial growers in their productions. Would it not be of value to this society and its reports, if we could in some way interest this class in our work? I believe the most marked results are shown in the handling of the strawberry—could we not arrange a system of premiums and judging, which would reach this class, and requiring membership and description of methods of exhibitors, gain support for the society, and valuable matter for our report. Should this be successful with the strawberry, it might be extended to other fruits. I hope you will give this your consideration. Something of the kind has already been undertaken.

This association can do a good work—a work which would be appreciated by the general public, if it would arrange a system whereby it could certificate new productions in horticulture. Great care would be required in this matter so that when this society had fixed its signature of approval to a new production, it would be of commensurate value to the originator and introducer, and of still greater value to the large number of purchasers, who are liable to be victimized by the misrepresentations of unscrupulous dealers.

In accordance with the action of the society at its state fair meeting of 1894, an invitation has been extended to the "American Pomological Society," to hold its next convention in Ohio. No action has as yet been taken by that society, but I am informed by its executive committee, that as far as they are informed, they are in favor of meeting in our state.

Should our invitation be accepted, it will devolve upon this society to make suitable arrangements to entertain the "American" society in a manner befitting our state, and the honorable gentlemen who will be our guests. Let us not be lagging in making proper provisions for the event. It has been many years since the society has met within our borders, but few of the gentlemen who graced the first occasion are left to tell of the progress that has been made. Our state, likewise, has grown in all its interests to proportions little dreamed of in those early horticultural days.

As fruit exhibitions are a prominent feature of these meetings, and as they usually occur when autumn fruits are in season, it will furnish a grand opportunity for this society and our state to show that we will not take second place as a horticultural state, and a society. To put this work in proper running order will require the united efforts of all. Let us make this event the most noteworthy in the annals of both societies.

It is important, therefore, that several committees be appointed at this session to look after the interests of the coming meeting.

In the foregoing, I have not mentioned *all* the openings for the advancement of our society; many others have been suggested, and will probably be brought up when opportunity offers. However, I think what has been advanced will form a beginning for future work. We must forge ahead in every possible way. Every year we should show on the pages of our reports *some* progress.

Let us gather into this society the best men and women of our state—they are not all here. Let every member advertise our society the coming year as they have never done before. This is a day of publicity; if we want our society to shine, we must not hide its light. Let us show by *our own* interest that it is worthy the interest of *others*.

We are workers in the upper realm of the noblest occupation known to man. To be in fellowship with plants, trees and flowers and fruits, is to be linked to the Almighty by the purest, sweetest, most natural forms. Our work is a constant revelation to us—unfolding day by day, we know not how, are the beauties and mysteries of plant life. We try to form the combinations—we have to leave the rest to the immutable laws of nature.

The avenue to horticulture is a wide one: there is room for *all*. We invite you to join our ranks and become one of us. We are a happy, hopeful class, *no matter if our year's calculations are disturbed by rain, drouth, frosts and blights; there is hope because of another season.*

Many times we see the fruits of our labors gone in a night, yet we are ready to rise "Phoenix-like" every time we fall: are ever ready for the coming season, with high hopes and faith in a Divine Providence.

Professor Lazenby: I am quite sure there are many suggestions in this interesting address of our president that the members of this society will want to discuss, but in view of the fact that Professor Bailey is obliged to leave at nine o'clock this evening the discussion will have to be postponed for the present.

Professor Bailey who spoke at length during the afternoon upon "Orchard Management" again addressed the society upon the rise and history of the landscape gardening, and illustrated his talk in a most entertaining manner by the use of stereopticon views of ancient as well as modern gardens, portraying beautiful pictures upon the imaginations of the audience of ideal landscapes, both of nature and art, from a horticultural standpoint.

On motion by Mr. Sweet a vote of thanks was tendered Professor Bailey for his lecture and entertainment.

Mr. Woodward: It strikes me that we were very much interested in our president's address and his recommendations, and it occurs to me that it would be well for us to appoint a committee to take some action upon the recommendations proposed in the address. I therefore move that a committee of five be appointed for that purpose. The motion carried. The appointment of the committee was deferred until later in the evening.

Professor Lazenby: We have upon the program a paper on "Galls of Raspberry, peach and pear," by Professor A. G. Selby, which we will now listen to.

Professor Selby: Those of you who were present at the meeting a year ago will be able to recall some discussion of a gall upon raspberries which was brought up by Mr. Waid's ad interim report. This gall repre-

sented by specimens and photographs I have here and those of you who care to do so may see it. It was from Fulton county, and was described in that report by the term "Black knot" of the raspberry.

GALLS OF RASPBERRY, PEACH AND PEAR, BY AUG. D. SELBY.

RASPBERRY GALLS.

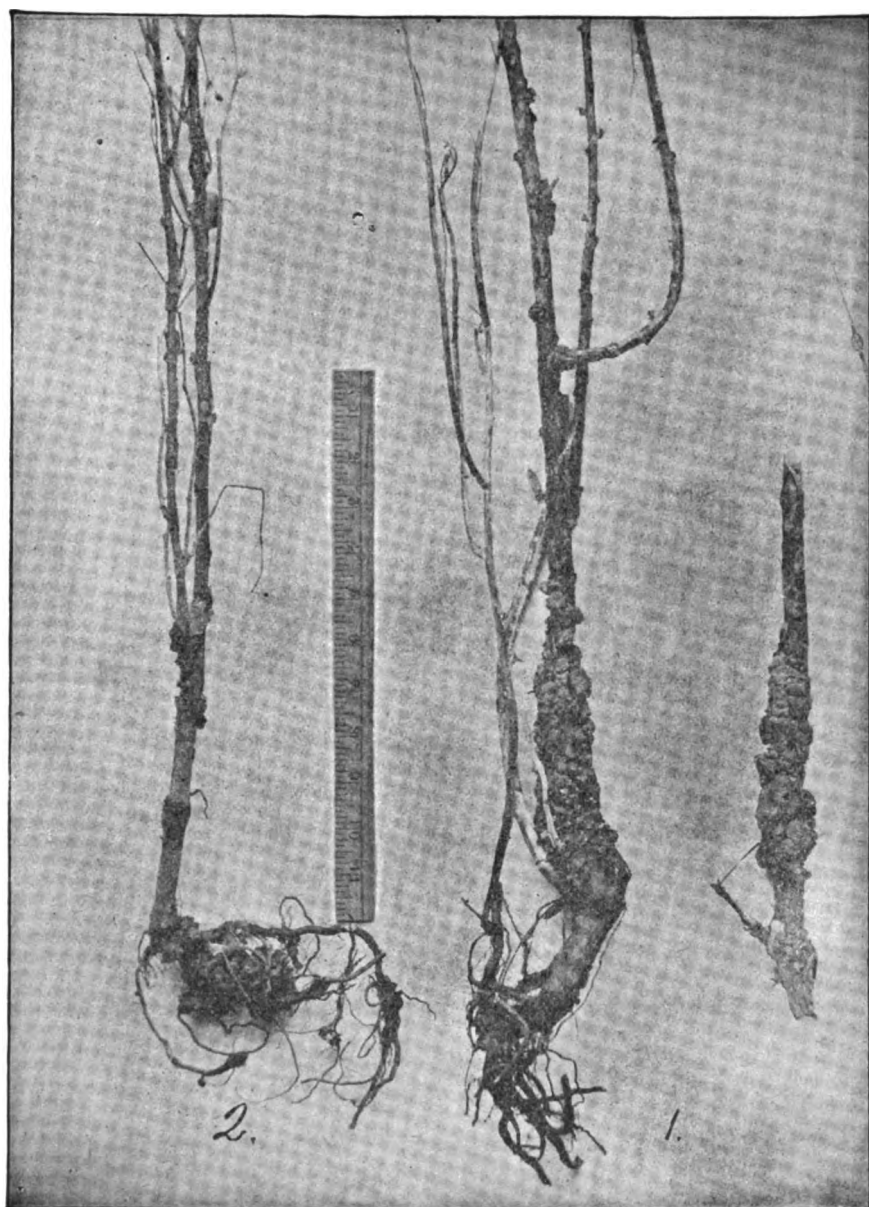
Those present at the Columbus meeting of this society in 1894 may remember the discussion of a gall on raspberry canes brought up by Mr. Waid's ad interim report,¹ in which he spoke of this new affection of that plant in Fulton county, under the descriptive name of Black Knot of Raspberry. The diseased canes came to the station in August or September, 1894, and had been in the writer's hands for examination. The disease was first found in a plantation of Gregg near Tedrow, of that county. That the term "gall" seemed more applicable to these excrescences was urged then, and nothing has since occurred to require a change of terms. The trouble is certainly not analogous to black knot, as it is not constantly (or at all) accompanied by a similar fungus. The galls which range from extremely small to an inch or more in diameter, occur, on the Fulton county specimens, at the crown (surface of the ground) and along the cane to the tip. Some canes had a very knotted appearance, and all suggested black knot at sight. In no case on these Tedrow specimens, did the galls appear to come on the roots, and no apparent cause could then be assigned. The excrescences were first noticed on fruiting canes at picking time by the owner, and those badly affected failed to mature fruit, the latter drying up and the whole plant succumbing through the probable girdling effect.

Plants taken in December through the kind assistance of Mr. Waid and Mr. Yost, the owner, were brought to Wooster and set out. One plant grew in green-house and one outside; in both cases, galls near the crown have been observed. On microscopic examination these yielded minute eel-worms or nematodes in the penpheral portions of the galls, where covered by a corky layer, but not in the interior. The plant grown in green-house at this writing, December 2, 1895, is bearing a large gall at crown and another is forming slightly higher up, both on new canes—a less common occurrence than on old canes. Mr. Yost, of Fayette, O., brother of the owner of the Tedrow plantation, obtained his plants from these diseased grounds and he now has the same difficulty in almost equal measure. About ten per cent. of the one year canes at Fayette were affected in July, while fifteen to twenty per cent. in the two-year-old Tedrow lot are reported as diseased with galls. It is a peculiar fact that settings of the same variety, made at the same time, in the vicinity of Tedrow, of plants obtained from the same place, are reported free from these galls, except in the case just cited. In the diseased parcel, the raspberries were set in low sandy loam, part of which had been used previously as a feeding lot for hogs; and in this fertile ground the canes had made a magnificent growth. The photograph and specimen marked Tedrow galls, represent material taken by myself, July 4, 1895 (see fig. in plate). That was at the date of first picking, and a large number of canes had well-developed galls, in which, however, no nematodes were found.

ANOTHER CASE.

Early in June, 1895, at Berlin Heights, Erie county, Thompson's prolific and Kirtland raspberries were found affected with a similar gall *at crown and on roots*. Specimens and "Berlin Heights" photographs show this well (see fig. plate).

¹Ward, C. H., 28th Report Ohio State Horticultural Society, 1894-5, p. 48.



The diseased plants showed marked symptoms of malnutrition and were making very slow growth; the galls were especially bad on the Thompsons. All the affected raspberries were in moist bottom lands of a loose sandy character. The specimens were examined fresh, but no organisms found constantly present; no nematodes at all. A few days later sections of the galls which had meanwhile lain in the earth of the greenhouse bench, were found to contain many nematodes. Fresh specimens since sent by the grower or collected by myself, show the nematodes in the outer portions of the galls covered by a dead, corky layer. But the most interesting fact of all, is the later growth of stem galls above ground on new and old canes. This was noted on August 21, and later specimens have the whole plant affected. No nematodes have been found in these galls above the crown in either the Fulton county or the Erie county specimens.

Such galls as these two cases represent seem analogous to those called crown gall, by Woodworth,² and by Tuomey,³ and stem and root tumors by Smith,⁴ if not identical with them.

Prof. Bailey⁵ has recently treated briefly of them, with particular reference to raspberries and blackberries.

CAUSE OF THE GALLS.

In the literature of the crown gall, which, I think, these raspberry excrescences are, no sufficient explanation of cause has been given, and no organisms found constantly associated with them. You have heard the statements made with respect to the nematodes found in the surface and below surface galls from both Tedrow and Berlin Heights plants. These nematodes, or those not distinguishable readily from them, produce small galls on roots of greenhouse plants, potatoes, etc., and are especially abundant in the south, where no freezes kill them. Judged by their effects on other plants it would seem that they have something to do with the production of the raspberry galls, unless they are wholly saprophytic, which appears more doubtful. That galls are the sole cause I very much doubt. The question of cause therefore remains open.

REMEDIES.

In remedies or preventives we have better evidence. Plants taken from diseased Tedrow plantation, produced diseased canes at Fayette. The evidence of spread in other plantations is convincing, though not conclusive.

The plants once diseased do not mature fruit. They are consequently valueless. The remedy will then be to dig up and burn all affected hills and canes promptly, and avoid planting again in the same ground soon thereafter. This remedy coincides with that given by the writers named above, in connection with crown gall.

Further, diseased plants and plants from diseased lots, are a source of danger and of loss. The grower should therefore look to the source and condition of plants set.

GALLS OF PEACHES AND PEARS.

Purchasers of peaches have for several years noted the crown gall on peach trees as they came from the nursery for delivery. The excrescences in these cases were sometimes the size of a walnut, and even larger, on small rootlets, large roots, or on the trunk at surface of the ground: occasionally these galls developed upon the stems affected at points above the surface. The earliest notice taken of

²Bulletin 99, Cal. Exp. Station, 1892. ³Bulletin 1 H. Aziz. Exp. Station, 1894. ⁴Jour. Myc., Vol. VII, p. 376. ⁵Bulletins 99 and 100, Cornell Exp. Station, 1894, 1895, pp. 427-8, 475-6.

these in this state, so far as I know, was by a purchaser of some southern trees; I saw some badly affected trees last spring, from a northern nursery, outside the state. The southern trees were set as far back as 1889, and the diseased trees suffering from the galls have, in practically all cases, failed to yield a single crop of peaches. They either died within the first two years or lingered along, without return to the grower. The photograph of large tree with immense excrescence at base, is of one of the last of the diseased southern trees mentioned, taken out last spring (1895).

The galls are sometimes hard and woody and frequently in this lot, soft and corky in texture—much like the below-surface raspberry galls described before.

On the lot of northern trees furnishing most specimens lost in 1895, the galls were at first quite soft, but became hard upon drying—I have some specimens I believe. Several growers of whom I have made inquiries, have taken out occasional trees suffering from these galls, which were apparently the chief cause of the trees' decay. It seems time for fruit growers to take cognizance of this gall and apply the only known remedy—tree destruction.

Pears are affected similarly, except that all the galls seen by the writer have been dense and woody in structure. Some specimens are shown.

CAUSE OF AND REMEDIES FOR THE CROWN GALL.

Our knowledge of the cause of these galls is very unsatisfactory. They seem to have prevailed with greater frequency in the fruit belts of the extreme west and southwest. Woodworth and Toumey have, as before quoted, written upon them in California and Arizona respectively. Whether the excrescences with which we have to do are the same sort that have been found in the irrigated lands of the Pacific slope is a proper question. The presumption from descriptions seems to be that they are practically so. The same galls prevail largely in Georgia and Florida. In no case yet studied has a specific cause been assigned for them. Smith in the paper quoted suggests that some animal organism may be expected—this organism to be the irritant which calls forth corky growth and gall production. Bailey has recently reviewed the root and stem-gall questions.

At present the cause remains to be discovered, except so far as nematodes are known to produce small galls on peach rootlets in the south, and may have something to do with the raspberry galls described in this paper. Contagious nature is strongly claimed for crown gall in California and Arizona. The evidence in Ohio supports it with respect to the raspberry galls—on the others I have no evidence to offer. The experience of growers who have had to do with peach trees that were affected with galls, shows that an affected tree is a worthless, if not dangerous encumbrance. Hypothetically, we are safe in holding that the trees with galls are both useless and dangerous. The

REMEDY

is, therefore, immediate removal and burning of diseased trees. This recommended on all hands. I shall go further and add a precautionary measure—do not accept any trees with galls from the nursery—certainly careful and reputable nurserymen will not send them out if aware of their nature. Careful nurserymen will get them occasionally on pear stocks when imported, and these send such stock to the brush heap. This is clearly what should be done with all stock and trees affected with these stem and root galls.

Professor Lazenby: The paper of Professor Selby is now before the society for discussion. The hour is not late.

Mr. Sweet: I would like to ask if he found anything on his Turner. Is it affected in that way?

Professor Selby: I did not. Some of these specimens are prominently marked with the galls. Here is one where the galls grow at the surface and above from the Fulton county specimen. Here are specimens from Erie county where it first appeared on the roots and then on the stems. Here is a cluster of gall roots from Kieffer pear trees. These came from the lake region of the state and I am informed that the pear stock is frequently impaired from it.

Mr. Ohmer: I would like to make some remarks in regard to the president's address, where he refers to the display of the fruits at the state fair. Would this be proper now, or at some other time.

Mr. Woodard: Mr. President, I would like to make a motion to the effect that the State Horticultural Society endorse Mr. Ohmer's actions in the past and recommend to the state board that he be re-elected at their next meeting.

The motion was carried unanimously.

President Cushman: It is suggested by Professor Lazenby that perhaps it would be well as we have time, to listen to the report of the Memorial committee. We now have time for that report and if there be no objection to it we will listen to it now. I will announce before the reading of that report, however, that the committee on the president's recommendations is as follows: E. M. Woodward, N. Ohmer, Professor Green, Mr. Miller and Mr. Pierce.

IN MEMORIAM.

A BIOGRAPHICAL SKETCH OF DR. N. S. TOWNSHEND, G. F. NEWTON AND
J. A. BORST.

BY PROFESSOR WILLIAM R. LAZENBY.

During the past year our society has seen its membership diminished by the reaper death. Three honored members have been called to cross the dark river since our last annual meeting.

DR. N. S. TOWNSHEND.

Dr. N. S. Townshend died in Columbus on July 13th, Mr. G. F. Newton died in Millersburg, Holmes county, August 17th, and Mr. J. A. Borst died in Greentown, Stark county, September 10th.

Dr. Norton S. Townshend was born at Clay Coalton, Northamptonshire, England, on Christmas day, 1815. His parents came to Ohio in the spring of 1830 and settled on a farm in the township of Avon, Lorain county, sixteen miles west of the city of Cleveland. Here he remained, assisting his father in the work of the farm, until his twenty-first year.

He found no time to attend school, but during his leisure hours he made good use of his father's small library. So well did he improve his time that before he reached his twenty-first year he was invited to teach the country school of his district.

In 1837 Dr. Townshend began the study of medicine with Dr. R. L. Howard, of Elyria, and during the winter of the same year he attended the lectures given at the Cincinnati Medical College. To do this, he walked from his home in Avon to Cincinnati.

During the winter of 1839 he was a student in the College of Physicians and Surgeons, of New York, and in 1840 he received the degree of M. D. from the University of the State of New York, of which the College of Physicians and Surgeons was then a department. He then determined to supplement his studies in medicine and surgery by spending a year or more in some of the best hospitals of Europe, a resolution which he carried out, and a most profitable year was spent in Paris, London and Edinburgh, where he secured practice in the hospitals and took private lessons in operative surgery.

The State Anti-Slavery Society of Ohio made him its delegate to the world's anti-slavery convention held in London during the month of June, 1840. This gave him an opportunity to meet many distinguished anti-slavery men and women from all parts of the world.

From 1841 to 1848 Dr. Townshend practiced medicine in Avon and Elyria, and in 1834 he was married to Harriet N. Wood, a daughter of James B. Wood, of Avon.

In the fall of 1848 he was elected a member of the General Assembly of Ohio, being a representative of the "Liberal Party," which was then a strong and growing organization in the northern part of the state. While Dr. Townshend was a member of the House of Representatives, he took an active part in the repeal of the "Black Laws" of Ohio, and also in the election of Salmon P. Chase to the United States Senate.

In 1850 he was elected a member of the convention to amend the Constitution of the state, and took an active part in its adoption. In the fall of the same year he was elected a member of the Thirty-second National Congress, being a contemporary of Clay, Webster and Calhoun.

In 1853 he was elected a member of the Senate of Ohio, and during the session he presented a bill calling for the establishment of a state institution for the care and training of imbeciles. This measure was enacted at the following session, and Dr. Townshend was appointed one of the three trustees to carry the law into effect. He retained the position of trustee by subsequent appointment for a period of twenty-one years.

Dr. Townshend has justly been called "The Father of Agricultural Education in America."

As early as 1854, being deeply impressed with the value, the necessity of some scientific training for young farmers, he called to his aid Prof. J. H. Fairchild, James Dascomb, of Oberlin, and Dr. J. S. Newberry, of Cleveland, and with their assistance established what may properly be termed the first agricultural college in the United States. For three successive winters, twice in Oberlin and once in Cleveland, courses of lectures were given, treating of those branches of science most intimately related to agriculture.

In 1858 Dr. Townshend was elected a member of the State Board of Agriculture. He served eight years in this capacity, and was twice president of the board.

In 1859 he was a delegate to the convention which nominated Lincoln for the presidency. Early in 1863 he was appointed medical inspector in the United States army, with the rank of lieutenant-colonel, in which capacity he served until the close of the war of the rebellion.

In 1869, after filling various public offices of responsibility and honor, he was chosen professor of agriculture in the Iowa Agricultural College, where he served one year.

In 1870 the act having passed to establish an agricultural and mechanical college in Ohio, he was appointed one of the trustees to carry the law into effect. In 1873 he resigned the position of trustee and was appointed professor of agriculture, his chair also including botany and veterinary medicine. He was professor of agriculture in the Ohio Agricultural and Mechanical College, afterwards the Ohio State University, from its opening in 1873, until 1893, when he resigned and was elected Professor *Emeritus*, which position he retained until his death.

From his early youth Dr. Townshend was interested in natural science and horticulture. In an address before the Columbus Horticultural Society he said that early in the spring of 1831 grafters were employed by his father to graft the natural fruit trees on his farm. Being directed to assist he soon observed how the operation was performed, and in a few years he had changed the character of the apples in the whole neighborhood.

Dr. Townshend was during all his residence in Columbus a member of the Columbus Horticultural Society, and for several years its president. He was also a member of the State Horticultural Society for many years.

He was eminently and distinctively a good citizen. Among his many shining qualities two were predominant. One was his uncommon generosity, and the other was his still more uncommon integrity. He was a man impelled by definite convictions, and did whatever he believed to be right, regardless of public opinion. He considered it the duty of every citizen to give earnest attention to all matters affecting the public welfare. He early sympathized with the opponents of slavery, and helped to sow the seed from which Lincoln reaped the harvest. But his sympathy was not for the colored race alone. Every city and state charity had the solicitude of his heart and the support of his hand.

The loss of such a man is felt, not alone by his personal friends and the city of his adoption, but by the whole state. He was in a true sense a public teacher and a benefactor of mankind.

Dr. Townshend died on Saturday, July 13th, 1895, in his 80th year.

He was in usual health until a few days previous, when he was attacked by dysentery. He leaves a wife and four children, who honor his memory, as well as being honored by it.

GEORGE F. NEWTON.

Mr. George F. Newton was born in the city of Leicester, England, in 1813, and came with his parents to this country when six years of age. He settled in Holmes county, O., in 1837, and for nearly half a century was a prominent figure in that county. He held at different times and for several successive terms the office of county recorder and county auditor. In 1854 he purchased the Holmes County Farmer and controlled it for five years.

Mr. Newton was a clear thinker, an able writer and a conscientious man. He was a close student of both agriculture and horticulture, and was for many years an active and honored member of the State Horticultural Society.

He left, nearly completed, the manuscript of a history of Holmes county, upon which he had been working, more or less, for thirty years, and which he hoped to have authentic in every detail. Mr. Newton was a man of great force of character and uncompromising integrity. An earnest, industrious, useful citizen, he was respected and honored when alive, and his memory will be revered now that he has passed to the other shore.

J. A. BORST.

Mr. J. A. Borst died in Greentown, Stark county, September 10th, in his 73d year.

He was a man of unusual energy, untiring industry and great usefulness. His special work in horticulture was the cultivation of celery, for which purpose he reclaimed a large, useless, unsightly marsh. During the season of 1895 Mr. Borst had something over one hundred acres in this crop, which furnished remunerative employment to many families.

His life teaches a valuable lesson, showing the possibilities that lie in the path of earnest, intelligent labor, and his example is well worthy of imitation.

Mr. Ohmer: If it is in order, I move that the report of the memorial committee, which has just been read, be adopted and published with the proceedings of this convention.

THURSDAY MORNING SESSION.

DECEMBER 5, 1895.

The convention was called to order at nine o'clock with President Cushman in the chair.

President Cushman: We will take up the next part of the program, which will be "The Brown or pustular spot on peaches; and first results in treatment," by Professor Selby.

THE BROWN OR PUSTULAR SPOT OF THE PEACH—FIRST RESULTS.
IN ITS PREVENTION, BY AUG. D. SELBY, WOOSTER.

In Bulletin No. 103 of the Michigan Experiment Station, bearing date of February, 1894, p. 57, the following statement is made by Prof. Taft, in discussing diseases of the peach:

"Brown spot (*Helminthosporium Caspophilum*). In September, 1893, a basket of seedling peaches in a peddler's wagon was noticed to be badly spotted with some fungus, that, although it had some slight resemblance to *cladosporium* (scab), was manifestly distinct from it. Superficial examination failed to reveal any specific spores, and specimens were sent to Prof. Galloway, of the Division of Vegetable Pathology at Washington, for identification. He was not familiar with it, however, and was not able to make out any distinctive spores. Dr. Beal had independently obtained specimens of the disease, and, after long and careful search, found the spores and was able to identify it as the above disease (*Helminthosporium*). The fungus seems to be quite superficial in its workings and the fruits were not noticeably distorted. Many of the fruits were badly spotted, and in some cases, nearly covered with yellowish brown scabs. * * * if it (the disease) becomes distributed it may become quite injurious to our peach crop."

This same spot of the peach fruit attracted the writer's notice on early peaches for sale at Petoskey, Mich., in 1894. That the disease prevailed widely in Michigan in that year, is shown by the frequency with which such more or less

pustular spotted fruit was found in the markets. It was secured, as stated, at Petoskey, Mich, later, in Bryan, O., and reported from Toledo, Columbus, and Cincinnati. Although sought for, none of this spot was seen among Ohio peaches of 1894.

For 1895, the case is quite different; peaches marked with the earlier stages of the postular spot, were observed at Catawba Island, O., and at Gypsum, July 3d, when the fruit was less than half grown. The successive stages were studied in later July, in August, September and October; specimens in the jar were collected in October. I believe that this new trouble is to be counted upon in future, and while by no means threatening, the obvious losses that promise from yellows, or borers, or from the galls spoken of, it will probably make some Ohio fruit balances unsatisfactory.

NATURE OF THE DISEASE.

This second spot on the fruit of peaches, is, like the others, fungus trouble, due to the growth of a parasitic fungus upon the exterior of the peach. That a fungus causes the spot, is shown by the constant presence of fungus threads upon the diseased areas, and their entire absence elsewhere. Examination under the microscope reveals these threads in the external portions. That this trouble is parasitic in its nature, is also shown by the prevention of a very large per cent. of it through the application of Bordeaux mixture, as described in later pages of this paper. The fungus causing the spots, is one with continuous, small, hyaline spores, apparently formed at the apices of erect hyphal branches. These spores are three to five μ by five to nine μ in size (largest about .3000 of an inch long). In none of the cases examined was the *Helminthosporium*, reported by Dr. Beal, found. From the fact that the spots occur *only* upon the upper or exposed sides of the fruit, it is clear that infection takes place by sowings of spores from some source. The working out of the life history of the fungus offers much of interest to mycologists, but may have limited practical value. This value cannot be estimated, obviously, until the life cycle is known.

EFFECTS ON THE FRUIT.

The fungus, in brown or postular spot, is very superficial; the effects upon fruit attacked by it are confined to the skin. However, you all know how serious skin troubles may be, when, as in the puncturing of curculio, the rupture may lead to serious rotting of the crop. In bad cases of brown spot the surface becomes cracked and it may open the way to worse things; this has not as yet appeared to follow. In early July, when the fungus is attacking the fruit, the spots caused are rust-brown in color and very obvious. These spots may be larger and less frequent or extremely numerous and dotting the whole surface. Later the spots develop a light-brown center about half the size of a pinhead, 0.5 to 0.7 of a millimeter in diameter, surrounded by a border of deeper color which usually becomes angry red at ripening (see the illustration fig. in plate). In the early and medium early sorts of fruit, as Alexander, Early Rivers and Wager, the affected area becomes elevated, giving a decided pustular appearance. This is shown, except the color, in the photograph of Early Rivers that I have here. In late varieties the pustular effect is often wanting, but the affected areas seem even more likely to coalesce, causing scabby appearing spots which are very liable to crack. But in no case are these brown or postular spots, here described, likely to be confused with the common, larger, dark spot on peaches and plums, known as "scab." The scab spots are due to another fungus, and usually much darker and larger, besides lacking the

angry red border of the brown spot. Because of the characters described, I think this new spot should have a thoroughly distinctive name, and have therefore called it "the brown or pustular spot of the peach."

LOSSES CAUSED.

The losses caused by the pustular spot are less apparent than real. Usually the fungus is so superficial that the quality of the peach is but slightly, if at all, affected. The effect on size of fruit in badly diseased peaches is decidedly unfavorable. The elements of loss are to be found in this reduction of size, and the combined result of size and external appearance of spotted peaches upon salability. When you note that in part of the unsprayed trees in the experiment at Gypsum, thirty-four per cent. of the peaches were spotted this first season of its appearance, it will be seen that the depreciative effect of the spot must prove decided.

REMEDIES AS SHOWN BY THIS SEASON'S EXPERIMENTS.

As already stated, the pustular spot made its appearance in Ohio this season on Catawba Island, north end, and at Gypsum; if elsewhere in the state, I have not learned of it. At Gypsum, the disease appeared in an orchard belonging to Mr. Wm. Miller, among Elberta peaches, upon which, through his kindness a series of experiments in spraying were being tried by the station botanist, to control leaf-curl. With the leaf-curl no decisive results were reached, but the unexpected presence of the spot fungus gave very conclusive evidence as to its prevention.

I shall not describe the plan of the experiments in detail. Check rows that were not treated at all, alternated with blocks of sprayed trees. The results were determined by counting the peaches when picked and recording the number spotted and the number free from spots. For the counting I wish to express my obligations to Mr. Miller.

The percentage statements are calculated from the counts. These are as follows:

ELBERTA PEACHES—UNSPRAYED.

Row.	Tree.		Fruit Good.		Fruit Spotted.
9	24		147		68
9	25		113		65
		34% spotted.	260	(393)	133
16	6		145		43
16	19		83		15
		20.28% spotted.	228	(286)	58
Total, 4 trees,		28.13% spotted.	488	(679)	191

ELBERTA PEACHES—SPRAYED 3 TIMES.

10	24		247		14
10	25		301		11
		4.36% spotted.	548	(573)	25
14	5	(10.9%)	90	{ Cu. S. O. 1st } { Bord. 1st }	11
15	20	(12.95%)	242		36
		12.4% spotted.	332	(379)	47
Total, 4 trees,		7.56% spotted.	880	(952)	72

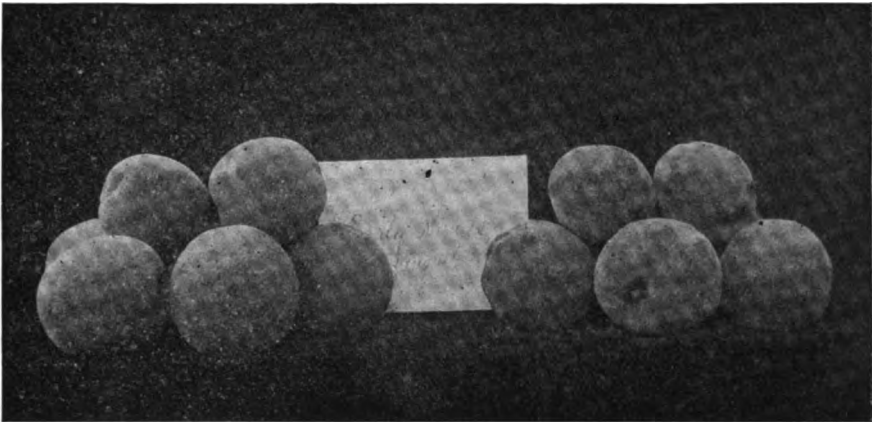
The sprayed trees here included were all treated three times: First, April 24-5; second, May 10-11; third, May 21-22.

One tree (R. 15, T. 6), on which counts were made, was sprayed but once and that April 24, 1895, with Bordeaux mixture. The counts are:

Row.	Tree.		Good.		Spotted.
15	6	19.9% spotted.	194	(242)	48

This against 21.27 per cent. spotted peaches on unsprayed trees beside it in one adjacent row (east side) and 10.9 per cent. spotted peaches on the adjacent tree (west side), which had been three times sprayed. This indicates that the benefits were from second and third sprayings. Taking all the three-times treated trees, against all untreated trees, the spraying shows prevention of 73 per cent. of the spotted peaches; the matter of improvement in spots without total prevention, was not determined.

For first spraying a four-pound to fifty-gallon mixture, seventy-five-gallon formula, is recommended, but after that two pounds copper sulphate and two pounds lime to fifty gallons, one hundred and fifty gallon formula, makes the mixture strong enough.



1. UNSPOTTED.

2. WITH BROWN OR PUSTULAR SPOT.

EARLY RIVERS PEACHES, AUGUST 3, 1895.

President Cushman: This subject that Professor Selby has treated on so ably is now open for discussion. If there are any questions you would like to ask the professor now is the time.

Mr. Sweet: I would like to ask the professor what strength Bordeaux mixture he uses.

Professor Selby: That is certainly a very important question, in connection with the spraying of the peach. For spraying before the bud opens I would use the four-pound mixture: four pounds of copper sulphate, four pounds of lime and fifty gallons of water. On a part of those trees we used for the second spraying the four-pound mixture, and on the other

part we used half that strength; two pounds of copper sulphate and two pounds of lime to fifty gallons of water. For the first spraying you can use four pounds of copper sulphate and four pounds of lime with fifty gallons of water. You could use the four pounds of copper sulphate alone without the lime. For subsequent sprayings I would use two pounds of copper sulphate and two pounds of lime to fifty gallons of water. And for sprayings after the leaves are grown I think we might reduce that strength.

The question has just been asked me as to what size "would you have the peaches for spraying?" I will say it will always do in spraying fruit trees to make the first application before the buds open, but where we follow with a second application it should be made just as soon as the blossoms have been shed from the fruit; a third application about ten days later and a fourth application might be made about a week or ten days later than that.

President Cushman: If there is nothing further we will pass to the next paper: "Fertilizing value of native weeds and plants," by Mr. L. B. Pierce.

Mr. Pierce: The title I gave the secretary in a hastily written answer to an inquiry from him is not just exactly the ground I wish to cover, and I have changed the title to "The Possibilities in Weeds." (Owing to lack of space this paper is omitted.)

Professor Lazenby: The method of treatment of our friend Pierce reminds me of Emerson's definition of weeds: He says "a weed is simply a plant whose fruit has not yet been discovered." And there may be a good deal of truth in it, but "a plant out of place" seems to be a very practical definition for us, and I have found that in that respect the worst weed we sometimes find in our crops are the surplus plants of that crop. I think I have seen corn fields where the worst weed in the corn field was the corn itself.

There is another question that has interested me the past year in regard to weeds, and that is the large proportion and the number and character of our introduced weeds as compared with our native weeds. If we should take from forty to fifty of our worst weeds from a horticultural standpoint, we would find at least eighty per cent. of them were introduced. They are not native. You take the weeds of the garden and those that grow upon our cultivated grounds; they are the worst ones, always found where we do not want them; they are introduced. Of course if we neglect these weeds they are frequently more or less troublesome; many of these are native, but why is it that the introduced weeds, like the purslane, the prickly lettuce and others that are found, we will say mallow, we do not find them in the woods, why is it that these weeds are so confined to our cultivated grounds? I think that is an interesting subject in connection with weeds. I think the explanation is that they are domesticated weeds, those grown in the old countries where the land is cultivated a

long time, and we might say they are weeds of cultivation, and when they come here they find a proper home in our cultivated ground, and that is the reason they are so troublesome.

I think there can be no doubt in regard to their having a fertilizing value. I remember of talking in New York with a very successful pear grower, who had a great deal of mallow in his pear orchard, and one portion of it was well covered with it. I offered some criticism about this weed, that it did not look very well. He says, "I wish my whole pear orchard was covered with that weed." He says it enriches the soil. I have this experience with the mallow that it has a very deep tap root, and probably there is some truth in what he said. It is somewhat like the sweet clover in that it has the same tubercles on its root that the clover has, so that like other leguminous plants it has the power of utilizing the free nitrogen of the air, and there is no doubt but what it might be a very valuable crop to use simply as a fertilizer under certain conditions.

Secretary Farnsworth: I think the main point to consider in this connection is that there is a time and place for all things. When we have a crop growing upon the land we do not want any weeds. I believe a crop of weeds on the soil is better than to leave the soil bare, provided the seed does not become distributed in other places. As for myself, I would rather have my orchard covered with a growth of weeds during the winter than to have it bare. I would prefer clover to weeds, but the weeds are better than nothing, and in many places where it is impracticable to sow clover it may be well to let the weeds grow.

Mr. Pierce: I was afraid everybody would take this view of it. I do not mean to use it for a crop to plow under, or where you can grow a regular crop, but there are hundreds of acres in Ohio that are not producing enough to pay for the plowing, producing eighteen to twenty bushels of oats to the acre and producing six or seven bushels of wheat, whereas some people are getting from thirty to forty. It is better to let such land lie idle for a while, and if you do that you have to put something on it that will make it stay by you. You might sow it to clover, but the clover will kill out. It is a biennial plant and will stay only a short time, but there are some crops that will stay all the while. I do not mean to convey the impression that weeds should be used where you can raise clover or rye or any such thing. It is used only where you want to let the land lie idle.

Mr. Albaugh: I have always had an idea that fallow ground when turned up in early June and harrowed and kept clean and the air permeated down through the soil that it did the soil a great deal of good and that that is the way to get the best land. If the land is poor, fallow it and stir it up with a spring tooth harrow, and in that way you admit the air with its different chemical actions, down through the soil and it does it a great deal of good. There may be an advantage in weeds in the way the essayist speaks of that we have not thought of. I know like Brother Pierce we are all a little loth to go out there and tackle the hard roots and fibers

of the pigweed on a hot July or August day, and if we can by any means find some way by which Dame Nature will take care of them for us we shall be very glad to have her do so.

President Cushman: We will now take up the next paper: "Fruit notes for the year," by Professor W. J. Green, of Wooster, Ohio.

FRUIT NOTES FOR THE YEAR, BY W. J. GREEN.

The weather is always a matter of interest to fruit growers, but that of last season was peculiarly so. Not wholly because of the many crop failures, but particularly in the case of apples, because the crop was so fair and free from blemishes. The dry weather commenced early and continued almost unbroken throughout the season. There were occasional showers, but the damp days were very few, which condition was unfavorable to the development of the apple scab fungus.

In many orchards scarcely a trace of the apple scab could be found during the season. As might be expected, no results were seen where fungicides were used. Sprayed apple trees were no better than those which were not treated, except in orchards where there was some development of the apple scab, and such cases were comparatively rare.

Although the apple scab was almost completely kept in check by the dry weather it was by no means annihilated, and it may be expected to come back again with the same virulence as before, but how soon no one can tell. Unless the early spring weather should be uncommonly favorable it may not make its appearance to a harmful degree next season, and we may find that fungicides produce no appreciable effect.

Taking for granted that such will be the case what is the best course to pursue? Is there any need of spraying for the apple scab when it is not present to such an extent as to be harmful?

The answer to these questions is easily found when we consider the nature and office of a fungicide.

The office of a fungicide is to prevent the development of fungi, but not to destroy them after becoming established.

In order to accomplish this early applications are necessary, commencing before growth starts in the spring, and continuing at frequent intervals during the first part of the season. This work is to be carried on each season, and it is evident that the more nearly any fungus is brought under subjection the easier the task of keeping it within bounds. To start with trees or plants comparatively free from disease and to keep them so obviously would require less work and yield better results than to begin with those which were badly infested.

From this we might infer that it would be well to begin spraying young trees the season of planting and to continue indefinitely. Our experiments show that this course is advisable, and for other reasons aside from the one given.

In the case of the apple we have, as the result of last season's dry weather, just the condition desired; viz, trees comparatively free from the apple scab fungus. We may now commence on comparatively healthy trees and by means of fungicidal applications, keep them so.

Obviously this is an advantage. The dry season has done more to help us than any amount of spraying could. It is clearly a wise policy to take advantage of these conditions, and by proper treatment to hold the disease in check. The orchardist who refuses to spray because there seems to be no immediate need of it, misses the chance to flank an enemy when he may so with the least possible

expenditure of effort. It is quite probable that there will be less spraying than usual next season, because of unsatisfactory results last season, but it would be unfortunate should the opportunity which now presents itself be lost sight of and missed by fruit growers.

The question of spraying apples has a broader significance than at first appears. The competition from the southwest will make apple culture in this latitude unprofitable unless we can meet it in some way whereby we can utilize certain conditions that are peculiar to us.

Missouri apples are larger, and taking the same varieties, are finer in appearance than we can grow. We can more than meet them in quality, and with proper care, including the use of fungicides, we need not fear as to color. Spraying heightens the color and increases the size, which, with natural advantages as to soil and climate in giving flavor leads us to hope that we may successfully meet the competition from the source named. Whatever care in the form of fertilizing and cultivation we may give our orchards spraying must not be neglected, or our apples will not find a market. If it were simply a matter of home competition we need not fear so much, for scabby apples might be accepted if no others were offered. We have not merely to meet lower prices, but if we are not careful our apples will not be taken at any price.

Since spraying is essential it is important that we improve every opportunity to make it effective, and as pointed out, the opportunity now exists to increase its effectiveness.

It is true that the conditions named do not exist in all sections of the country, nor to the same degree in all parts of the state, but this does not detract from the force of the argument, as applied to particular cases.

STRAWBERRIES.

The strawberry crop was almost a failure because of hard frosts and severe drouth, hence it is not possible to give anything like a complete and satisfactory report. It is true that all varieties did not seem to suffer alike, but a part of this difference is due to the fact that all did not bloom at the same time. Those that were in full bloom when the frosts came of course suffered more than those that had not come into bloom or had passed that stage. The fact is that the frosts were hard enough to kill about all of the blossoms that were out. An effort to compare varieties as to hardiness was made, but nothing definite could be made out, except in a very few cases.

None are included in the following remarks, except those concerning which something definite can be said, omitting those about which nothing new was learned:

Sunnyside.—This is an imperfect flowering variety and endured the frost better than most kinds. The berries are of medium size and firm enough for near market, but somewhat acid for home use. The variety may be raked as promising.

Jay Gould.—This variety was one of the best, so far as quantity of berries was concerned. Heretofore it had not compared well with other sorts, and when we can get something better it cannot be called desirable. Possibly hardiness is one of its virtues.

Cyclone.—Quite badly injured by frost, and yet gave a fair crop. It must be accorded a high place among perfect flowering sorts. It is a suitable mate to Haverland.

Princeton Chief.—Not as prolific as desirable, although it seemed to recover from the effect of the frost better than most other varieties.

Splendid.—This seems to be a promising sort, although it did not produce many berries last season.

John.—Berries large, but quite soft and acid. Possibly may have some value for near market, but hardly high enough in quality to recommend it for home use.

Lawrence P. Allen.—This appears to be a valuable pollen-bearing sort. The plants are healthy and prolific. The berries are of fair size and good color.

William Bell.—It is probably a better crop than most of the perfect flowering sorts and as in former seasons, excelled the Marshall.

Timothy.—Escaped the frost better than most varieties, but has the fault previously noted of not coloring properly. For home use it has some value, but would not be profitable for market.

Don Bird.—A variety having imperfect flowers. It appears to be quite promising. The berries resemble the Wilson in appearance, but are less firm.

RASPBERRIES

Most varieties escaped the frost although some were considerably injured.

Gault.—This variety happened to be in bloom when the frost came and nearly all of the blossoms were killed. It did not produce a second crop, as was expected, hence we are not able to report on its value here.

Eureka.—This seems not to have been overrated, and we feel like ranking it as the best blackcap now before the public.

Kansas.—This too is a valuable variety, ranking next to the Eureka.

Lotta.—A very valuable late sort, which bids fair to supplant the Gregg.

Columbian.—No doubt this is an improvement upon the Shaffer, which it resembles.

London and *Miller* have not been fully tested, but they appear to be promising.

BLACKBERRIES.

Eldorado.—This variety passed the winter safely, although peaches were killed, but a frost came when it was in bloom and destroyed nearly all of the blossoms. In hardiness it seems to rank about the same as Snyder, and is superior to it in size and quality.

Ohmer.—A superior variety so far as size and quality are concerned. It seems to be hardier than Lawton, but not so hardy as Snyder. No doubt it would be well adapted to the lake region.

Gooseberries and currants were much damaged by frost. Red Jacket produced a few berries and Columbus gave a light crop. Both these varieties have merit. The first-named seems to vary somewhat in size, but is without doubt very prolific, while the latter is less prolific but uniformly large. North Star is very vigorous in growth and prolific, but seemingly not superior to Victoria.

Professor Green: (Continuing). I will say that I believe the Eureka raspberry is the best grown, even better than the Lotta. It does not only grow about the same size but the plants are even more vigorous, more productive, I think and the berries are a better color.

Question: How is it for hardiness?

Professor Green: I think there is no trouble about this. It has passed through several severe winters.

Question: How much later than the Lotta?

Professor Green: The Eureka lasts the whole season; begins with the Palmer and lasts through the Gregg. The Gregg comes and is gone about the time the Lotta begins, and the Eureka lasts right through about

as long as the Lotta. The Lotta is not to be compared with the Eureka, because the Eureka begins at the beginning of the season and continues right through. The Lotta will give more fruit after it begins to ripen than the Eureka will in the same length of time.

I do not know exactly what to say in regard to the Gault raspberry. I cannot make up my mind fully. As I saw it growing on Mr. Gault's ground I was impressed that it was a splendid variety. We secured plants last year, but the berries were killed by the frost worse than any other variety and I supposed it was because it happened to be in bloom at that time. It may have been because it is more tender. I do not know. If it is a fact, that is against it. At any rate it has not borne at the station, although the plants were large enough to bear last year. We got no berries at all, the first growth being killed by the frost and they did not produce late in the season.

Mr. Sweet: How many plants did you have?

Professor Green: I think we had a dozen plants.

Mr. Pierce: What did your shoots do; did you root them?

Professor Green: No we didn't root them. I don't put that against it. It may be that next year it will behave as it did on Mr. Gault's ground. I don't wish to say very much about the Gault. As I saw it on Mr. Gault's ground I thought very highly of it. There are two or three reasons why I think it will be a valuable variety. It is late. It commences to ripen later than the Gregg; it is very firm, and for shipping and drying it would be a first class variety. When I was at Mr. Gault's, I think it was about the 17th of July, 1894, he gave me a quart to take home, something over thirty miles. I carried them across the country without any sort of protection and when I got home they were just about as good as when I started. I do not know of any other variety I could have done that with. They had settled very little. They are not seedy like the Ohio and they are a good deal better quality. As to its everbearing qualities I have not had a chance to see.

Regarding blackberries I can't say very much as to their passing through the winter. Last year the Ohmer, the Erie and the Lovett were killed at ten degrees below zero, while the Eldorado and Snyder and Taylor passed through all right, but the Eldorado was killed by the late frosts.

Regarding the north Star currant, I do not know as I am able to speak fully. I am of the opinion that it is pretty near as good as the Victoria. I doubt if it is any better.

Question: Is it any larger?

Professor Green: I do not think it is any larger.

Question: Is there any better current than the Victoria?

Professor Green: There are some larger but not more profitable.

Regarding gooseberries, I believe the time has come when we can just as well cultivate nearly all the foreign kinds as not. It is well to get good kinds of our own, but we can take foreign kinds and by spraying

keep the mildew in check; by two or three sprayings of the Bordeaux mixture.

Mr. Albaugh: I want to make a little explanation in regard to the Eureka raspberry. That raspberyy originated within two miles of our place, in the hands of a Mr. Brown, who was then a nurseryman. Mr. Mohler lived only two or three miles from Mr. Brown and each one undertook to propagate this new variety as a kind of admixture, but before they proceeded very far their finances were in the same condition that Mr. Mohler tells us about the roots of the Mohler strawberry, that is to say, in a tangled condition, and when they came out of the tangle that Eureka was in the hands of Mr. Brown, and Mr. Mohler had it on his hands, and since that time it has become the Mohler raspberry of Mr. Mohler. We understand it there. We are sure that the plants are exactly the same thing.

Mr. Duer: In regard to picking apples, I want to begin picking mine as soon as they are ready and keep at it until they are taken care of. If I had not done that this year I would not have had any Baldwins. There came a storm after I had picked them, and what few there were left on the trees were blown off. I admit that they don't color up nicely like they would if you let them hang on the tree for some time. The last few years I have been selling my apples in bulk as it costs so much for barrels in our country. When I packed my apples in the car this fall I put the green apples in one end and the yellow apples in another place and the red apples in another part of the car, and it made no difference whatever to the buyer. The man came and looked at my apples and told me what to do with them, and I got the same price for the apples that the professor says are not worth so much. I do not advocate to let apples hang on the trees until too highly colored up.

Mr. Sweet: When Professor Green speaks of spraying, he does not say how early. But I think for anything like the scab, if it is a lodgment or stays on the tree, we ought to spray before there are any leaves. I have made a practice of spraying my apples and plums before the leaves came out, and some of my neighbors say there is no need of that, but I think if it is for fungus and spraying did any good, that if the fungi were there, the seed must be somewhere in the limb, and we can reach the limbs and bodies a good deal better with the spray before there are any leaves. Someone asked Professor Bailey yesterday, how to prevent rot in plums, and it seems to me that he left out one important thing. With me it is to get off all the rotten plums that are on the tree, unless you pick or knock them off they will remain on the tree for two years, and it seems to me that in the rotten plums and apples is where the spores are retained. I tell my pickers to pick off the rotten peaches and plums and drop them to the ground. And I asked Professor Bailey last night if he didn't think he left out an important point, and he said, "Yes, and I ought to have explained about it."

Professor Lazenby: I would like to give a note or two in regard to

the North Star currant that we saw through the kindness of Mr. Scarff, in our own grounds. This specimen was certainly a very fruitful one. This cluster was about ten inches in length and I had the curiosity to count the number of berries. There were over one thousand currants upon it. They were not large. It took 120 to weigh an ounce, and if you have ever counted the number of currants in an ounce you will know that they have got to be pretty good size unless it takes about 100 to weigh an ounce. The average number of seeds was three. These made 13.5 per cent. of the total weight. The percentage of water I found to be 86.5 per cent. The berries were of a deep rich scarlet color and the skin was unusually transparent. I appreciated the flavor very much. It seemed to me that they were very good.

Dr. O. W. Aldrich: While upon this subject of fruit I would like to say a word or two in regard to a variety of pear. While it is not, strictly speaking, a new variety, it is probably not in general cultivation. I fruited this year the President Drouard which is catalogued as a late winter pear, but I have not been able to keep them up to the present time. I had one dwarf tree set out in the orchard two years ago in the spring, which bore about fifteen specimens of about as fine a pear as I ever saw, about as large as the largest size Flemish Beauty, and in quality as fine as any late pear I ever saw. Whether its season would be the usual season for our locality, or whether on account of the hot, dry weather it ripened up sooner, I do not know. I know it is catalogued as a winter pear.

I had another variety August Droche that I had never seen fruited elsewhere the grafts of which I got of John Saul and it is said to be a winter pear that would keep till April or May. The size of the pear would average with the Sheldon, possibly a little larger, and in quality was very good. It is ripe now. The curculio or something had injured it so that they were a little onesided.

President Cushman: This matter of fruit hints or general discussion is probably of as much interest to the society as anything else we can take up, and I do not wish to cut the discussion short if there is anything further to be said.

Professor Selby: I would like to emphasize the point Mr. Sweet brought out, that is that the statement with reference to plums applies to cherries and peaches which are rotted by the same fungus. The first and best thing to be done and the thing never to be left undone is to clean the trees.

Mr. Albaugh: Speaking of new things in the way of fruit, it just now strikes me as a new thing and quite a peculiar thing. There is an apple tree in our county that is about fifty years old that begins ripening its fruit about the first of July, and the apples are as large as the Ben Davis, and upon the same tree will be all sizes of apples from that apple (indicating) down to the size of a marble. And from the first of July on until picking

time the apples on that tree are continually ripening, and they will last until the following April.

Mr. Woodward: They are everbearing. (Laughter.)

Mr. Albaugh: It is a great novelty. The tree was planted a great many years ago. They talk about its being planted by the Indians. The fruit has been exhibited at the Miami and Montgomery county horticultural societies. It certainly is a great curiosity.

The Secretary: You know this to be true, do you?

Mr. Albaugh: Oh, yes, it is four or five miles from my place. The bloom comes on all at one time. Sometimes the tree will produce two crops. It has been doing that for fifty years.

Mr. Ohmer: Is there only one tree bearing?

Mr. Albaugh: They have four thousand trees ready to set out.

Mr. Pierce: Are the late apples full size.

Mr. Albaugh: They are all full size.

Question: What is the soil of that section?

Mr. Albaugh: The soil is the clay loam of the Miami Valley.

Question: On a south or an east slope?

Mr. Albaugh: It is not on any slope at all. It is as level as this floor four or five miles around there. Those fellows have great ideas about it. They think they ought to get ten or twelve thousand dollars for it.

President Cushman: This is a cut (exhibiting photograph) of the wonderful apple that Mr. Albaugh speaks about.

Mr. Albaugh: The Coloritype Company of New York wanted to make a photograph of these apples, and they were sent to that company along about the first of October, and this is a little sample of the apple, the photograph of it, about the size and color along about the first of October. The last ones get full size and will last until April.

Mr. Whitney: While we are on fruits I might give notice that I may have a new currant some time or other that will eclipse everything else. I will tell you what I know about it. A lady told me this fall that she had a currant bush that came up near an old quince bush, without any care, and that it produced currants as large or larger than the Fay, was a much better bearer, had twice as large a cluster at least, and she wanted me to take some of them and grow them. She dug some of them up and brought them to town and I have them ready to plant in the spring. I questioned her quite closely as to whether she had grown the Fay. She claimed that she had the Fay and knew the size, that they were better and twice as large.

President Cushman: I think it is profitable to give our attention to all these little things. We can keep a better watch on them than if they are sprung on us all at one time.

Dr. Aldrich: There is another matter of some interest to the society that I mentioned at the time the Russian cherries were first imported. As

I said then, Professor Budd of the State University had furnished me trees of many of the varieties grown upon their grounds. That was seven or eight years ago and the trees have now reached fair bearing size. I found this year a very unfavorable season for cherries, but there was one thing in regard to the growth of these cherries that led me to think that in seasons where we have frosts that they may be valuable, more so even than the Early Richmond variety, on account of their closeness of growth and luxuriance of foliage. The most valuable of the varieties are Sklanka, Lithauer and Fravendorfer, and several of the varieties bore almost full crops when the Early Richmond had a comparatively small number, had very few blossoms that escaped the frost; the foliage seems to be thick and heavy, and it protects the fruit better than the more open trees. I am of the opinion that several of these varieties are quite valuable. They ripen about the time the Early Richmond does. There are a number of these things that I hope to be able to give you something a little more definite on in a year or two. I can describe them a little better and give you something more as to their characteristics. This is a characteristic of the trees to be a little compact in growth, rather dwarf in body and a thick, heavy foliage that seems to protect the fruit.

Question: What is the quality?

Dr. Aldrich: They are just ordinary quality.

Question: Isn't there a tendency to be bitter?

Dr. Aldrich: Sklanka is not. Another variety called the Lithauer is a little inclined to be bitter. I do not think it is objectionable in canning, but for eating it has a little bitter taste.

Mr. Rocksill. I want to ask a question here in view of a circumstance that occurred a year or two ago in our society. In addition to asking the question I want to avoid springing the subject on the innocent members of the state society. At a meeting at J. R. Borst's a year or two ago I introduced a seedling peach, a remarkably fine one, in fact I believe at the time I challenged the state or the nation or any other country to produce anything that would beat it. I introduced it as a seedling and had introduced it at the same society some two or three preceding years, but had never got much of a recognition for it, but that year I had some young trees that had only a few peaches on them, but they were extra fine, so I pushed the matter again to the attention of the society at that time. I said I believed the only way to get the peach introduced would be to charge two dollars for a little shoot and a dollar a quart for the seed. Now, I want to ask if there is any possibility of getting the same kind of a peach from that seed or not. I told them at the time that I had four generation of trees. I want to know whether that just happened that way or whether good seed is worth anything?

Mr. Miller: I do not believe we can rely upon it to get the same variety, while we may get something very similar. I have grown just a few

trees from pits, and among them there are no two just alike. From thirty to forty trees were poor, while a good many of them are valuable, probably as good as the original tree but not much better.

Mr. Ford: There is a variety of peach grown in Portage county under the name of the Orange peach. It comes almost absolutely true from the seed. It has been grown there for almost thirty years and there is scarcely any variation at all. There are a good many of that variety grown from the seed and they all look and taste alike. Now, these things sometimes happen, but I would say there is no absolute certainty of getting the same thing; the only way to do is to bud from the original tree. And while I am up I wish to say a word in regard to blackberries in corroboration of what Professor Green said in regard to the Eldorado. It came through the winter all right and bloomed but it had no blackberries on account of the May frosts. The Western Triumph and Stones Hardy were the only two varieties I had that came through the winter perfectly and bore; the Minnewaski, Snyder and other varieties (I think there are two or three kinds of Snyder) were injured some.

In regard to the North Star currant, we would have fruited it if it had not been for the frosts last season, but I will say this, that it is the strongest grower, growing the largest per cent. of cuttings and making the largest plants of anything we have ever tried. I have not seen enough of the fruit to say much about it.

Mr. Lawrence: I wish to add a word to what Mr. Rocksill has said with reference to the peach he is trying to introduce. The original pit came from a tree I own and was a late Crawford. And Mr. Ramsey took a few of these pits and planted them more than eighteen years ago and that identical peach was produced and has been reproduced ever since and there is no difference. It cannot be detected.

President Cushman: We have a great deal on our program and the time is growing short for its presentation. Perhaps it will be best to go to the next paper, which is by Professor Webster, who was not able to be present yesterday. The subject is "The Fruit-Bark Beetle," which is of considerable interest to horticulturists.

Professor Webster: This insect is one of the large and constantly increasing number that have come to us from Europe, having been introduced probably in fruit trees.

THE FRUIT BARK BEETLE, *SCOLYTUS RUGULOSUS*, (RATZ).—By
F. M. WEBSTER.

This insect is one of the large, and constantly increasing, number that has come to us from Europe, having doubtless been brought over in nursery stock. As early as 1834 Schmidberger observed these borers in some young apple trees that had been grown in pots, for experimental purposes, doubtless, and had been thrown out on account of injury by another borer. The opinion was expressed that their natural abode was in the forests, and that these borers did not attack

trees that were in thoroughly healthy condition. This is the first notice we have of the doings of this borer in any country. In 1837, Ratzburg, in his work on forest insects, briefly described and figured this insect, stating that it was injurious at various places in Germany, attacking plum and apple, killing branches or very weak stems. In 1861, Goureau speaks of the pest appearing to have for its natural mission the destruction of sick or feeble trees or branches. In 1881, Eichhoff speaks of these borers attacking diseased plum, apple, pear and cherry, also the hawthorn and elm, soon killing the parts attacked. The foregoing is all that I have been able to glean from foreign literature on the subject of the ravages of this borer.

Our first report of the insect in America came from the late Dr. J. L. LeConte, who, prior to his death, paid especial attention to the beetles of North America. In the proceedings of the American Philosophical Society for 1878, Dr. LeConte made this statement: "This is a suitable opportunity to notice the introduction of this European species into the United States. I have received specimens from Elmira, N. Y., where it attacks peach trees." In 1880, the late Prof. C. V. Riley recorded its occurrence at Fairhaven, New Jersey; Williamsport, Maryland; Coopersburg, Pennsylvania; District of Columbia and Hillsborough, Missouri. I have stated that this insect was probably introduced into this country from Europe on nursery stock, but I do not wish to leave the impression that it was diffused over the country after reaching here by such means, or at least entirely, as it is provided with wings, and there is no reason why it might not spread from place to place in a perfectly natural way, and especially is this probable as it seems more than likely that the sense of smell in the adult borer is much more highly developed than in man, and that by this alone they are enabled to detect the slightest weakness in trees at a considerable distance away, and long before such defect is apparent to the eye of the most observing orchardist. It is enough for my purpose to show that it has spread over the country very rapidly, and is much more abundant in this country than in its native Europe, probably because it is there held in check, and has been from time immemorial, by its natural enemies. These were evidently not imported in any considerable numbers, and hence, until our native birds and insects could become acquainted with it and learn that it might become an article of food for them, natural restrictions on its increase and spread were not sufficient to keep it in check. We have, however, some natural parasites that are supposed to have first occurred in Europe, but these are not sufficient to control it here in America.

The mature insect that has caused so much alarm among orchardists in Ohio, during the last few years, is a small beetle nearly black in color, except the tips of the wing covers and lower portions of the legs, which are red, rather slender in form and only about one-tenth of an inch in length and one-third as wide. The larva or grub, which, by the way, was by far the most destructive, is white with a brown head, wrinkled and without eyes. It is about the same size or possibly a little larger than the adult, and between which and this there is a pupal or chrysalis stage during which no food is required and therefore no injury is perpetrated.

The habits of this borer are as follows: The winter is passed in the burrows under the outer bark and between this and the wood, and in the larval stage. In spring the larvæ pass to the pupal stage and from this to the adult, which is probably reached about June. The female then bores directly into the bark to the wood and then usually either directly upward or downward parallel with the tree or limb. This channel is made as large or a little larger than her body and in it are deposited the eggs that are to produce the next generation of borers. As soon as the young hatch from the eggs they at first commence to eat out each side from this original channel, which in Europe is termed the cradle, more or less

transversely to the tree or branch, but later on from necessity also taking a more or less parallel course, so that a badly infested tree will have the entire bark converted into a mass of channels filled with excitement of the larvæ. These last reach their full growth and pass the pupal stage in the burrows, emerging as adults in late summer or early fall, probably during August and September. These adults pair and the females make their cradles as previously described, and from their eggs a second brood of larvæ is produced, which passes the winter in the bark transforming as previously described also. Thus you observe that there are two broods of the pest each season, and that a tree must twice resist attack from the pest during each year. There is here another point that must not be lost sight of and that is that it is during June that any mal-nutrition would exhibit itself earliest in sap conditions—any lack of vitality whereby the pumping up of the sap would be obstructed, would probably result in a slight fermentation of this which would give off an odor that might be detected by the female. So also, August is a season when unhealthy trees are most likely to be observed by the careful orchardist. From this it certainly would seem that there was something more than a coincidence in the fact of the mother insect appearing just at a time when she will be best able to detect such trees as were in a suitable condition to offer food for her progeny. It seems to me that we have here a case of adaptation that has been overlooked, and the idea is strengthened materially by the fact that the female at all times seeks those places in which to bore into the bark and oviposit, where the movement of the sap is the most sluggish. May not the period of oviposition in this insect correspond to the period in the movement of the sap where exosmosis ceases and endosmosis has begun?

It was in June 1890, in Southern Indiana, that I first encountered this insect, and I can well understand why people insist that it does attack perfectly healthy trees, because I was fully convinced that it had begun its work at one corner of a peach orchard, and there was every prospect, at least as I then saw matters, that it would, if not stopped, destroy every tree. But strangely enough, they stopped with those three trees, and committed no further depredations except to attack a small cherry tree near by that was seriously injured by an entirely different insect. My next experience was during the following August in a different locality and under conditions that obliged me to revise my opinion, and admit that a perfectly healthy tree would not be attacked by this insect, except in case of an injured limb. I cannot do better than to give you my report on this investigation, made at the time.

"On July 31, specimens of the beetle and sections of an infested apple tree were received from Mr. W. of Princeton, Indiana, with complaints of the ravages of these insects among both apple and pear trees. August 4 and 5 the apple and pear found to be infested by this insect in all its stages. This orchard comprised one thousand Ben Davis apple trees, set alternately in the row with the same number of Kiefer Hybrid pear trees, all having been planted out in 1883. The ground was uneven and had for the most part been but recently cleared, before the trees were planted, some of it having been cultivated and other portions not. At the time of my visit the land was badly overgrown with weeds and underbrush, being pastured with hogs and horses. The owner stated that one of his trees had been attacked and died in 1888, fifteen or twenty in 1889, and forty or fifty the present year. After considerable time had been spent in examination of infested trees, Mr. W. called my attention to the condition of the roots of these, claiming that the roots of all the trees attacked in his orchard had been diseased, he was quite sure, prior to their becoming infested by the borers. A further study of his orchard did not prove the correctness of his theory, but did reveal the fact that all trees seriously injured by the insect in question were either diseased at

the roots, or else had sustained some injury tending to destroy the free circulation of the sap, although the tree itself might appear in a healthy condition.

The orchard of Mr. C. A. B., located in the same neighborhood, but at a considerable distance from that of Mr. W., was next examined. This orchard comprised 500 Kieffer pear trees, 500 peach alternated with 500 Ben Davis apple trees, and about 1,000 miscellaneous pear trees, all, except the last, having been purchased of the same dealer, and set out at the same time as those of Mr. W. The conditions of the two orchards were, however, otherwise very different. In Mr. B.'s nearly every tree was vigorous and healthy, showing the best of care and attention. The soil above the roots had, in the majority of cases, been treated with ashes or lime, and where these were not used, stable manure had been applied. The land had been thoroughly cultivated, but not cropped between the rows, no cultivation being given during the latter part of the summer. The fatalities since planting, up to date of examination, from all causes, amounted to one pear and two peach trees, only the latter being attacked by scolytus. The pear tree, which did not become infested by the borers, had been attacked at the roots by the same species of fungus as found in the orchard previously examined, and to which Mr. W. attached so much significance. One of the peach trees above mentioned had been dug up several weeks before, and from lying out in the hot sun and wind, the bark had become thoroughly dead, except on some of the larger branches. In the dead bark of this tree were found many young larvæ, but these were also dead. In the partly living bark, on the branches, where found a small number of nearly full grown living larvæ. The other peach tree was dug up by Mr. B. and myself, and, while the roots were dead, there was no fungoid growth upon them. In company with Mr. B. I examined a great number of trees in this and other orchards, but found only a single borer, and this was running about over the branches of a peach tree, and not engaged in attack. Returning again to the orchard of Mr. W. both he, myself and Mr. B. spent several hours in further examination of the trees, but in no case did we find the borers attacking healthy trees, although many of the uninfested were having a severe battle for life in their uncongenial environment.

In summing up the results of observations on this insect, it would appear (1) that the beetles attack only such trees as are probably fatally injured, either by some trouble at the root or the lower part of the trunk, whereby the circulation of the sap is more or less destroyed; (2) the larvæ cannot sustain life in bark which is wholly dead; (3) adults seldom or never oviposit in healthy, vigorous trees, but are attracted by odors given off by sour or fermenting sap; (4) trees affected by pear blight do not induce oviposition; (5) the species is double brooded, the eggs being deposited in June and August, the insect passing the winter in one or more of its stages of development in the bark."

These last investigations seemed to me to prove that the condition of trees has everything to do with the attacks of this borer, and I have yet to observe anything that points to the contrary. During the last year this insect has come to me with surprising frequency, showing that its work has been very general over the state, but I fully believe that the true cause will be found in the extreme dry weather that has prevailed during the last two years, and which has affected the vitality of many trees to the extent of retarding the free action of the sap, though this effect probably was not apparent to the ordinary observer. With the coming of more favorable meteorological conditions, I confidently look for a decrease in the ravages of this insect, but believe that the same effects will follow care or neglect precisely as in the cases of the two Indiana fruit farms, to which I have just called your attention.

Of natural enemies, I have reared two or three and other entomologists have

also reared others, but these do not appear to be able to hold it in check. Birds, probably woodpeckers, destroy more than parasitic insects, judging from the frequency with which I find the bark of infested trees pecked into or even torn to shreds.

In regard to remedies, it will of course be a good plan to cut down and burn, during the winter or early spring, all badly affected trees or limbs, as this will materially decrease the number of borers that will be abroad another year. While there are many insects that will attack trees or fruit perfectly regardless of their vigorous or nonvigorous condition, this is not true with respect to this species, and I would urge the best of care and attention to keep trees in a thrifty, growing condition, as a preventive measure and to ward off attack from these bark borers. Possibly a whitewash, with a quart of salt added to each three gallons, will aid in keeping the females from laying their eggs by rendering the bark so distasteful to them that they will prefer to look farther. It is not unlikely that a mixture of soap and carbolic acid, made by dissolving a bar of hard soap in two gallons of hot water and while hot adding a pint of crude carbolic acid, will have a similar effect. Paint the trees with this late in May or early June and again during the last of July or first of August, using an ordinary paint brush and rubbing the mixture well into the cracks and crevices of the bark.

Mr. Whitney: I would like to have Professor Webster explain this (referring to a diseased raspberry cane); it seems to be something new in raspberry diseases.

Professor Webster: I have whittled this specimen up so you can hardly tell what it was like originally. It is this enlargement of the cane. Sometimes a cane will have an enlargement that will be almost three times as big as the original cane. If you cut it you will find that something has eaten spirally around it. The insect is called the Red-necked Raspberry Borer. It is found in Southern Ohio largely in the Dew Berry, and there they have succeeded in preventing its depredations by cutting off all the shoots that come up prior to the beginning of the ripening of the fruit, because just at that time they cease laying eggs, so that whatever shoots come up after that will be free from the eggs and there is plenty of good wood to produce the fruit. I have not tried it on raspberries or blackberries but possibly the same method will apply there also. The remedy then is to cut the young growth off just before the time the fruit begins to ripen, and use the second growth.

President Cushman: There is a report of a committee that had better come in at this time.

Secretary Farnsworth: The committee appointed yesterday to take under consideration the suggestions of the president, in his annual message and also some suggestions made by Professor Green and myself, met this morning, and were in session until time to adjourn for this meeting, but were unable to finish the report in full as we found a great deal of matter to be considered, and did not wish to act hastily. The only thing upon which definite action was taken that it is advisable to report on now is the suggestion that in the appointment of the ad interim com-

mitteemen, the state be divided into ten districts and each district represented by a member of the ad interim committee.

In the matter of a change in our meetings it was thought best perhaps not to report on that until the plan was a little more definite. So the only thing which it was thought advisable to make a report on at this time, was that the committee recommend to the society that the state be divided into ten districts so that each county would feel that it had a representative on the ad interim committee. I suppose you know why this is done. Heretofore some portions of the state have been unrepresented, and while some have felt that they did not deserve representation, still we feel that the province of this society is to advance the interests of horticulture throughout the entire state as much as possible.

Professor Lazenby: I suppose we are to regard this merely as a report of the progress and that the committee will report again later?

Secretary Farnsworth: It is pretty difficult to cover so much ground in so short a time. This was a recommendation to the society, while the understanding was that the rest of the topics under consideration were to be considered further, either by a committee appointed by the president, or referred back to the same committee for further consideration. The committee in fact could not finish the work in the time allotted for it, and this ad interim matter was the only thing fully developed, and we took that up that we might act upon it before our next election. The other matters can be left in the hands of the committee or referred to another committee.

President: The committee make the report that they consider it advisable to divide the state into ten districts and that we elect an ad interim committeeman to represent each district. Now, we will entertain action by the society on that recommendation.

Professor Lazenby: I move that the recommendation be adopted.

Mr. Albaugh: And that a committee of three be appointed at once to bring in a report immediately after dinner as to the districts. (Motion carried.)

President Cushman: I will appoint on that committee, Mr. Albaugh, Mr. Teeple and Professor Lazenby, who will please make a report upon this matter before the election of officers.

Now, what will you do in regard to the partial report that this committee has made on other matters. It is impossible for a committee of this society to transact this kind of business in anything less than eight or ten hours, and it is my opinion that you should refer this matter to a committee who will go to work and do the work thoroughly that is assigned them, and make their report at the February meeting. They cannot get it before this society at this session unless we hold the meeting over until Friday night. I would recommend that you take that action.

Mr. Sweet: I move that this matter be referred back to the same

committee and that this committee be retained to complete the report. (Motion carried unanimously.) And thereupon the society took a recess until 1:30 o'clock P. M. of same day.

AFTERNOON SESSION.

(Dec. 5th.)

The society was called to order by President Cushman promptly at two o'clock, who announced that the secretary would read some telegrams received by him.

The secretary then read the following telegrams: stating that they are in answer to telegrams of greeting that were sent to the horticultural societies of Michigan and Indiana:

INDIANAPOLIS, IND., *December 4, 1895.*

W. W. Farnsworth, Secretary, Canton, O.:

Message received. We reciprocate your greeting with best wishes for a successful meeting.

C. M. HOBBS, President.

J. TROOP, Secretary.

ADRIAN, MICH., *December 5, 1895.*

Ohio Horticultural Society, Canton, O.:

In enjoyment of many good things; we extend greeting and wishes for even greater good fortune for you.

R. MORRILL, President.

President Cushman: The committee that was appointed to district the state into ten districts, is ready to report. We will listen to the report.

Mr. Albaugh: The problem isn't quite so easy as it looks on paper, because there are some sections of the state that are very decidedly fruit growing sections and others not fruit growing, and are not often represented with us. However we have endeavored to divide the state into districts that would be, if not quite equal in territory, at least equal in horticultural interests.

REPORT OF THE COMMITTEE ON DISTRICTING THE STATE.

We, your committee on districting the State beg leave to report as follows:

FIRST DISTRICT.

Williams,
Fulton,
Lucas,

Defiance,
Henry,
Wood,

Paulding,
Van Wert,

Hancock.
Putnam,

SECOND DISTRICT.

Mercer,	Mardin,	Shelby,	Champaign,
Anglaize,	Darke,	Logan,	Miami.

THIRD DISTRICT.

Preble,	Greene,	Clinton,	Clermont,
Montgomery,	Warren,	Hamilton,	Brown.

FOURTH DISTRICT.

Ottawa,	Erie,	Huron,	Crawford,
Sandusky,	Seneca,	Wyandot,	Richland.

FIFTH DISTRICT.

Marion,	Knox,	Delaware,	Clark,
Morrow,	Union,	Licking,	Madison,
		Franklin.	

SIXTH DISTRICT.

Fayette,	Highland,	Adams,	Gallia,
Pickaway,	Ross,	Jackson,	Lawrence.
Fairfield,	Pike,	Scioto,	

SEVENTH DISTRICT.

Lorain,	Medina,	Lake,	Ashtabula.
Cuyahoga,	Geauga,		

EIGHTH DISTRICT.

Ashland,	Summit,	Holmes,	Coshocton.
Wayne,	Stark,		

NINTH DISTRICT.

Muskingum,	Perry,	Monroe,	Athens,
Guernsey,	Morgan,	Hocking,	Meigs,
Belmont,	Noble,	Vinton,	Washington.

TENTH DISTRICT.

Trumbull,	Columbiana,	Carroll,	Jefferson,
Mahoning,	Tuscarawas,	Harrison,	Portage.

N. H. ALBAUGH,
A. TEEPLE,
W. R. LAZENBY.

The president: Gentlemen, what will you do with this report?

On motion by Dr. Aldrich the report of the committee is unanimously adopted.

SECRETARY'S REPORT.

Members and Friends of the Ohio State Horticultural Society:

I take this opportunity of bringing to your notice some of the problems which present themselves for my consideration from time to time. Perhaps the most serious of these is the matter of printing our annual report.

Under the present plan, which has been in vogue for a great many years, our reports are printed in the report of the State Board of Agriculture.

We also have printed for the use of the society six hundred separate copies, four hundred and fifty being bound in paper and one hundred and fifty in cloth. By this means we save paying for the type setting and our reports also receive a much wider distribution in the agricultural reports. These are the advantages; on the other hand there are serious disadvantages, the principal of which is that we are obliged to wait from six to nine months for our reports, by which time much of the matter is unseasonable and much of it has long since been published in our agricultural and horticultural periodicals.

My maxim in regard to difficulties is, if an evil can be removed remove it, if not then stop grumbling and wait patiently for something "to turn up" that will help to remove it, or make its removal possible.

I wish our executive committee, or a special committee appointed for the purpose, would pass judgment upon this and set it at rest. It is apparently impossible to hurry the state printer, and I presume their bids on the work are made with the understanding that it can be done at their leisure. A great many residents of this and other states who are not members of our society apply for reports. I would be glad to have this committee decide upon what terms they may secure them. It has been customary to exchange reports with some eight or ten state societies, sending usually ten or twelve copies to each state society. Shall this practice be continued? It seems to me that aside from three or four of the states closely adjoining us it is useless. Few of us have time to read what was done at a horticultural meeting a year ago at a point a thousand miles away from us, especially when the surroundings, varieties, etc., are so different from ours as to rob the proceedings of most of their value, and when we have long since read the cream of the proceedings in some of our horticultural papers. It occurs to me that we might be benefitted by offering inducements to members to bring in new members. For instance, the member who during the year brings in the most names and dollars should receive either a life membership or be entitled to have his expenses to the annual meeting paid by the state society.

We are continually losing our members by death, removal and non-payment of dues, and must use every effort to not only repair that waste, but to largely increase our numbers, that the size, effectiveness and working value of the society may at least keep pace with the rapid development of horticultural interests.

Our society has frequently secured the attendance of members of other state societies at our meetings with great satisfaction to ourselves, and I believe it would be wise for our society to exchange delegates with a few of the adjoining state societies, as the expense would be about the same, and we would establish closer relations with our sister societies.

President Cushman: The question now is on what we shall do with the secretary's report.

Mr. Albaugh: Is there a committee it can be referred to?

The president: Yes sir, we have a committee on other recommendations.

On motion the secretary's report is referred to the committee on president's address.

Professor Selby: There is a motion I want to make, if this is the proper time to make it. I do not know whether the committee upon president's message just exactly covers this, since it was not perhaps directly referred to in the message. I refer to some possible modification of the Black Knot Yellows law. Now, since this committee is likely to have its hands full, particularly of subjects pertaining immediately to the society I make the motion that a committee of three be appointed, and I hope that of this committee Dr. Aldrich will be a member, to draft such desirable modifications as may appear proper, and present them at the February meeting of the society for its approval.

President Cushman: You have heard the motion of Professor Selby. Is there any discussion? I would like to say in connection with this that in my address you will remember I said in connection with the San Jose scale last year I appointed a committee on law as regards the introduction, or stopping the introduction or dissemination of injurious insects in Ohio, and that committee consists of Professor Lazenby, Professor Webster and Mr. Aldrich, and they are to report at this meeting, and I would think that this matter might just as well be handed over to that committee for their action, as they are in that line of law, regarding insects, fungous diseases, etc.

Professor Selby: That is perfectly acceptable to me.

By common consent the matter was accordingly referred to the committee already appointed as above.

Professor Webster: As this is the first time I have been called upon to report I have not had any experience, and if I have not a report I shall have to plead inexperience in the past as an excuse. I have simply jotted down a few things that seemed to come in this line.

REPORT OF THE COMMITTEE ON ENTOMOLOGY.

BY F. M. WEBSTER.

During the current year much has transpired in the state that has been of interest to the entomologist, and of equal importance to the horticulturist. There is certainly an increasing interest being taken by the general public in questions regarding applied entomology, as is witnessed by the increasing demand for information. During the first eleven months of this year, over 1,400 letters and postal cards have either been received by me or have been referred to my department of the experiment station, all relating directly to entomology and all requiring a more or less extended reply. During the same period, investigations of the ravages of destructive insects have been carried on over the state, which has necessitated the expenditure of nearly two months in the field, and in order to carry out such investigations, I have traveled over 7,000 miles. At the Toledo meeting of this society, December, 1892, a resolution was passed asking that a special appropriation be asked for by the station authorities to enable the entomolo-

gist to study insect pests in person in orchards and fields over the state. The station authorities asked for and obtained a special appropriation of four hundred dollars, or two hundred dollars per year, which has since been increased to five hundred dollars, or two hundred and fifty dollars per year. It is with this fund that I have been carrying on field investigations since May, 1893, as the station has supplemented it with practically nothing. I make this statement because there has, in some quarters, been misconception regarding the use that has been made of this fund, which the society was instrumental in securing, and therefore, I feel that you are justly entitled to it. As stated in my annual report as entomologist of the experiment station for the year 1894, "books and current literature that made the intelligent use of this fund possible, have been furnished largely at my private expense." The present season, I have been granted an assistant for two months, who was paid out of this fund and employed in the chinch bug investigations exclusively, outside investigations have been carried on entirely by myself.

As may be supposed, considerable time has been spent in looking after the six orchards affected with the San Jose scale. I have visited four of these, and know that the fifth is being cared for, while of the sixth I can only say that I heard of it in a roundabout way, and while I have given unmasked advice, I have never heard directly from the owner. Of the orchard of Mr. D. H. Nichols, in Clermont county, the most seriously affected of all, I can say that it is being managed in a manner in every respect creditable to the owner, who is entitled to a vote of thanks from this society for his unrelenting fight against the spread of this pest on his grounds. The scale has not been entirely exterminated, but there will be few if any live ones left by the coming of spring. At the last meeting, in Toledo, I mentioned the plan of cutting off the trunk and grafting thereon, as it would be less difficult to treat the stump than the whole tree. The experiment did not prove a success, not that the grafts failed to grow, or did not furnish a sufficient top, but the growth was so rank and the young wood so brittle that the winds made sad havoc with these new tops and many are broken off. It now appears probable that the best plan will be to prune off all limbs to within a few inches of the trunk, and treat the latter with an ordinary paint brush, using either kerosene or a mixture of whale oil soap. In this way, every cavity in the bark or about the buds can be reached with the brush and thoroughly disinfected, while the young limbs will be pushed out, and little if any time lost, as regards to the tree coming into bearing. What for a while threatened to be a serious outbreak of the plum scale, in Ottawa county, was successfully avoided by the timely use of kerosene emulsion and the good offices of friendly parasites. The grape root worm *Aidia viticidaria*, has received little attention this season, for the simple reason that I was too crowded with other work to be able to spare the time to continue the investigations and experiments. I hope, another year, to again take up the matter. The rose bug, *macrodactylus subspinosus*, has not received further attention, partly for the reasons given above, and partly because the problem has almost ceased to be an entomological one and become one in social dynamics. At least such appeared to me to be the case when I saw a vineyard and peach orchard attacked from opposite directions by myriads of these pests, while the owner was not rearing enough himself to have worked any injury whatever, and was simply at the mercy of his neighbors, with no way under the sun whereby he could prevent being thus imposed upon. You will pardon me for telling you just what I at the time thought, viz, that you needed a "humanicide" as badly as you needed insecticides. The investigation has, however, never been entirely dropped, as I have a case in Huron county, where the only breeding ground in the vicinity, for this pest, and the largest peach orchard, belong to the same party, and I shall in time be able to show how far

he has been able to protect himself by the management of the ground in which the rose bug breeds. An investigation of the black peach-aphis, *aphis persicae-niger*, Smith, which attacks both roots and twigs of young peach trees, not unfrequently seriously interfering with the growth, has been undertaken. An experiment in the use of carbon bisulphide for destroying those on the roots has been started this fall, and I hope to be able to carry this out in the spring. The Harlequin cabbage bug, *Murgantia histrionica*, a native of Mexico, has appeared in extreme southern Ohio, and its movements require close watching. The asparagus beetle also needs looking after in northeastern Ohio. There are so many problems that await time and assistance before they can be followed, and as soon as this is furnished me, I shall be able to better look after your interests. I am much gratified by the increasing interest that members of this society are taking in this kind of work, and assure you that your encouraging words and marks of appreciation are not lost on me, but are continually making my work in Ohio more pleasant and inspiring. So long as I am connected with the State of Ohio, in the capacity of entomologist, I shall carefully watch after your interests and protect them to the extent of my ability and resources.

Mr. L. B. Pierce: I would like to ask Professor Webster if this is the scale that appears in hickory trees, if it is not the same thing. They said so in New York state last season.

Professor Webster: They say lots of things. I do not know.

Mr. Pierce: They claim it has been in the hickory trees. A. Bower has a piece of ground that has about 100 hickory trees on it, and they cut some of them down last spring and these trees were absolutely covered with the scale that looked like the specimens they showed in western New York last winter. Now the plum scale is not any more serious around Ravenna than it is anywhere else, but this hickory orchard must have been a breeding ground for hundreds of millions.

Professor Webster: It remains to be proved whether it is the same thing or not.

Mr. Pierce: A nurseryman of great prominence got up there and said that this was a fact, and the entomologist was there and he agreed to it. I am sure of my facts.

Professor Webster: I am exceedingly doubtful about its being the same scale, and yet they look so much alike I have no proof. I believe that the same identical insect grows in the elm. I think that I could trace those that were on Mr. Miller's plums back to a big elm tree that stood in his yard, but I know a dozen entomologists who claim they are different. I do not know, and I must say I do not believe anybody knows.

Mr. Pierce: I simply gave this as an item of interest, and therefore if it is the same it leaves one tree and goes to another. The plum scale has not been a pest in New York more than three years.

President Cushman: We will have to leave this for future reports of our entomologist.

Mr. Sweet: I would like to ask Professor Webster if he would recommend spraying a tree with clear petroleum,—kerosene?

Professor Webster: No sir, I would not. It has been done on an orchard of two hundred or three hundred trees, and while I could not see any ill effects, still I would not recommend it.

A Member: I would like to ask Professor Webster what is the best work on entomology, up to date?

Professor Webster: That is a pretty hard knot. I suppose you mean for the use of the fruit grower?

A Member: Yes sir. The use of a county horticultural society.

Professor Webster: I do not know anything better than Saunders' work. It is a little old, but it is the best thing we have. It does not cover all the ground, but it is the best excuse we have for a good work. It is called Saunders' Injurious Insects.

President Cushman: I think we will have to shut off the debate here and listen to the report of our committee on forestry, by Professor Lazenby:

Professor Lazenby: Mr. President, I have but a very brief report to make. All I wish to say as a report on forestry I will present in two points: first, the rapid diminution of timber lands in the State of Ohio. I have a chart here that illustrates this quite well which I will leave upon the table. This chart shows the amount of timber in 1853, then the per cent. of reduction to 1870, and the further per cent. of reduction to 1880. These are the last figures I have been able to get. If you will examine this chart you will see that the timber lands are diminishing with very great rapidity.

The other point I would like to make is this: As horticulturists we have long since ceased to plant the small, gnarly, natural fruit, but we feel when we plant an orchard we want the best varieties and we want to take reasonable care of them. As a matter of fact we should regard our timber lands in the same way. Can we afford to let the poorer varieties of trees grow for wood. We seem to be pretty well satisfied if we have anything growing in the way of wood. Now, there is just as much difference in the woods as there is in the varieties of fruits. A good quality of timber which is worth something will grow just as thriftily as a poorer one. I believe we might do a good deal of good in the way of improving our wood land by simply cutting out the poorer varieties and encouraging the better ones to grow and to scatter their seeds.

President Cushman: The next report is that of the Ornithologist, Mr. Pierce.

REPORT OF MR. PIERCE.

Ladies and gentlemen, this report has not been called for for two years back, and I did not know until a short time ago that one was expected of me. But I will report briefly.

The common complaint of a scarcity of song birds around country homes, he thought, arose because no adequate shelter was afforded them. Everything was

trimmed up and thinned until it was easy for cats and hawks to make short work with any birds bold enough to make an attempt to make a home.

At his own home, where there were numerous groups of large evergreens, there was no scarcity of song birds. It was one long bird concert during the summer, commencing with the red bird's whistle, half past four in the morning, and ending with the whippoorwill's song at half past eight at night. Some birds appeared to be nearly exterminated. He had not heard the drumming of partridges for two years, and quails were very scarce. Two years ago a sportsman's club obtained fifty or more dozens of quails from the south and let them go in the swamps west of Akron, but it was thought that the hard winter of last year killed most of them, as they were very scarce. The English sparrow was very plenty in Akron and in villages, but did not seem to be running out other birds out in the country as had been charged. It was a street scavenger and got a large share of its living from offal.

President Cushman: We will now listen to a short paper that Mr. Campbell has sent.

WHAT SHOULD BE THE RELATIONS BETWEEN THE OHIO STATE HORTICULTURAL SOCIETY AND THE EXPERIMENT STATION?

BY GEO. W. CAMPBELL, DELAWARE, O.

By request of our president I offer a short paper upon this subject.

As the objects of both institutions are in the same line, their relations should be intimate, friendly and helpful; and such as will enable them to work harmoniously for the best interests of the public, by giving truthful, reliable and practical information as to the best varieties of fruits and vegetables, and also of the best methods of cultivation to produce the most profitable results.

I think no one who has taken sufficient interest in the matter to read the reports can doubt that our experiment station is doing good and useful work for the benefit of the horticulturists and agriculturists of our state, and that it is worthy of the confidence, recognition and assistance of the members of our society in every practicable way, by fairly reporting their experience, especially with new introductions, whether they have proven valuable or otherwise.

It would seem to be the special province of the experiment station to test, carefully, the most promising introductions of new fruits, garden vegetables and the most important agricultural products, and to give the public accurate, comparative results of their investigations.

Perhaps not less important and valuable is the work of the station in the study and test of remedies for preventing the ever-increasing noxious diseases, which injure our plants and trees; and the best methods of arresting or destroying the myriads of insect enemies which infest and ruin so many of the products of the garden, the orchard and the farm, and which now inflict incalculable losses to the state and to the nation.

Another manifest duty, both of our society and the experiment station, is to protect the public from all unworthy attempts to introduce inferior or worthless varieties, or to impose old varieties with new names, by means of extravagant misrepresentations, where the only apparent object is to obtain large and unreasonable prices from credulous and deluded customers.

A good work may also be done by encouraging and recommending the planting of good, old, well-tried varieties, which may be in danger of neglect and discontinuance by praises of new, untried and doubtful novelties.

And although the work of the experiment station must be largely confined to one locality, the careful observations and tests of the comparative merits of different horticultural and agricultural products will be useful, especially if supplemented by reports from members of our society from different sections of the state.

As our president requested a short paper, I shall make no apology for brevity. I only hope the few suggestions I have made may lead to fair discussion of the interesting question of what should be the relation between these two institutions to produce the greatest good to themselves and the people of our state.

President Cushman: I had hoped we would have time to discuss this matter, but I fear we will not, but had better proceed to the next order of business, which will be the report of the auditing committee.

REPORT OF THE AUDITING COMMITTEE.

Dayton, O., Dec. 5th, 1895.

N. OHMER, TREASURER,

In Account with the Ohio State Horticultural Society, Dr.

Date.	To Whom Paid.	Vouch- ers.	Amount.
1894.			
Dec. 14	William Miller, for services rendered	1	\$9 30
14	W. W. Farnsworth, " "	2	61 71
14	S. M. Woodward, " "	3	30 25
14	H. H. Altfather, " "	4	12 45
14	W. G. Farnsworth, " "	5	12 20
14	E. H. Cushman, " "	6	18 20
14	John Pierce, " "	7	8 65
14	N. H. Albaugh, " "	8	12 00
14	C. L. Whitney, " "	9	19 60
14	Prof. L. R. Taft, " "	10	18 05
14	W. W. Farnsworth, " "	11	75 00
14	C. H. Waid, " "	12	19 70
14	J. J. Fromm, " "	13	7 25
14	F. M. Webster, " "	14	8 20
14	E. T. Roth, " "	15	10 25
14	T. S. Johnson, " "	16	57 00
14	O. W. Aldrich, " "	17	3 00
14	A. Teeple, " "	18	12 70
14	G. T. Keim, " "	19	11 00
14	W. N. Scarff, " "	20	7 15
14	L. B. Pierce, " "	21	22 35
14	N. Ohmer, " "	22	6 00
18	Geo. W. High, " "	23	2 00
18	L. R. Hurst, " "	23	8 00
18	C. W. Counter, " "	23	36 00
18	S. R. Moore, " "	23	4 00
1895.			
Jan. 9	August T. Selby, " "	24	3 20
18	Frank J. Brown, " "	25	50 00
March 4	Wm. Miller, " "	26	6 00
4	Wm. R. Lazenby, " "	27	9 70
4	W. J. Green, " "	28	14 10
4	L. B. Pierce, " "	29	16 80
4	C. L. Whitney, " "	30	15 90
4	E. M. Buechley, " "	31	13 40

REPORT OF THE AUDITING COMMITTEE—CONCLUDED.

Date.	To Whom Paid.	Vouch- ers.	Amount.
1895.			
March 4	H. H. Altfather, " "	32	26 75
4	W. W. Farnsworth, " "	33	40 40
4	E. H. Cushman, " "	34	11 15
4	K. A. Arthur, " "	35	16 50
4	W. M. Webster, " "	36	9 50
8	W. N. Scarff, " "	37	12 25
14	C. H. Waid, " "	38	2 00
28	L. B. Pierce, " "	39	6 60
28	W. W. Farnsworth, " "	40	75 00
April 19	M. H. Weinland, " "	41	86 00
June 26	W. W. Farnsworth, " "	42	75 00
Sept. 20	W. W. Farnsworth, " "	43	96 25
Nov. 11	Luth'n Book Concern, " "	44	116 40
Nov. 21	E. H. Cushman, " "	45	7 50
			\$ 1,202 41

Dayton, O., Dec. 5th, 1895.

N. OHMER, TREASURER,

1894.	In Account with Ohio State Horticultural Society,	Cr.
Dec. 15	To balance in treasury	\$ 666 69
18	Warrant on Treasurer of State	346 65
20	From Secretary, membership fees	77 00
1895.		
March 4	Warrant on State Treasury	180 20
April 19	Warrant on State Treasury	219 60
Oct. 5	Warrant on State Treasury	171 25
Nov. 14	Warrant on State Treasury	116 40
	Total receipts	\$ 1,777 79
	Various amounts paid out	\$ 1,202 41
1895.		
Dec. 5	Balance in treasury	\$ 575 38

December 5, 1895.

We, the undersigned, have examined the above report and accompanying vouchers, and find it correct.

W. N. SCARFF,
E. M. WOODARD,
W. R. LAZENBY.

On motion by Professor Selby the report of the treasurer and auditing committee was unanimously adopted.

President Cushman: The next business in order will be the election of officers. I will appoint as tellers Mr. W. N. Scarff and Mr. E. M. Woodard.

Mr. Aldrich: The provisions of the constitution apply to the elec-

tion of the four regular officers and not to the ad interim committee or the executive committee, I therefore move that a committee of three or five be appointed to nominate these officers.

President Cushman: That has been the custom of the society and if that is still the intent of the society it is all right, but it was the intent of the committee that was appointed to redistrict the state that when the state was laid out into districts, instead of nominating members for the ad interim committee that we would elect one member from each district just the same as we elect any other officer, by nomination and ballot.

Upon the suggestion of Mr. Albaugh and the common consent of the members a short recess is taken and the members present from each district requested to nominate their representative upon the ad interim committee.

When order was called a ballot was taken upon the election of a president, and Mr. Cushman was re-elected by a large majority.

President Cushman: Gentlemen, I thank you. I take this to be an endorsement of the policy I have tried to advocate for this society, and with your help I shall endeavor to extend it to greater success the coming year.

Professor W. R. Lazenby was re-elected vice-president of the society. Mr. W. W. Farnsworth re-elected secretary and Mr. N. Ohmer, re-elected treasurer.

The following persons were chosen to represent the various districts upon the ad interim committee.

First district, Mr. C. H. Waid, Emery, Ohio.
Second district, Mr. E. M. Buechley, Greenville, Ohio.
Third district, Mr. F. G. Whithoft, Dayton, Ohio.
Fourth district, Mr. William Miller, Gypsum, Ohio.
Fifth district, Mr. W. N. Scarff, New Carlisle, Ohio.
Sixth district, Mr. Nelson Cox, Ensee, Ohio.
Seventh district Mr. E. M. Woodward, Kirtland, Ohio.
Eighth district, Mr. H. H. Aultfather, Minerva, Ohio.
Ninth district, Mr. S. R. Moore, Zanesville, Ohio.
Tenth district, Mr. Frank Ford, Ravenna, Ohio.

On motion by Mr. Albaugh the president is authorized to appoint the executive committee of the society.

President Cushman: Strawberry Culture, is the next item on the program. We will now listen to a paper by Mr. H. H. Aultfather.

Owing to lack of space this paper is omitted.

Mr. Ford: The last part of this the summing of big figures and great profits on big berries, I am afraid if it gets out will be a little misleading. I believe that to-day there is more money in the old Crescent than any other berry we have ever had. That is the one that is exempt from low price. I am sure if the Crescent is properly handled it will bring in more money than the Sharpless.

Mr. Aultfather: This paper was written in a hurry, and I simply took this to show the difference in the variety. If I was taking any interest in it I would plant the Greenville instead of the Sharpless. I was just trying to show the difference when they are a drug on the market. I used the Sharpless simply because I had grown it.

Mr. Ford: The Sharpless in our market never bring $12\frac{1}{2}$ cents a quart. At least, it is very seldom that it does. About 8 cents would be the proper price for it, and the Crescent would be 6 cents. Here is a fact; we have tried all kinds of strawberries, and we have found that the larger the berry the smaller the yield. The larger the size of the single berry the less quarts you will get.

Mr. Aultfather: I think the comparison would be about the same. I think if the Sharpless strawberry will only bring 8 cents a quart that the Crescent will not average 6 cents.

Mr. Buechley: I am afraid that this recommending of the Sharpless might be a little misleading, because the Sharpless is very fastidious in its tastes about its location if it is successful. The Sharpless is not worth cultivating in my locality. We get a crop only once in five or six years and the rest of the time we do not get half a crop. With us we can grow Crescent for a dollar a bushel better than we can grow Sharpless for three dollars a bushel.

President Cushman: It seems to me, as near as I can draw my conclusion from Mr. Aultfather's paper, that you are pitching into something that he did not expect, because he only used this variety as a figure-head. You are pitching into him the same as if he had recommended the growing of the Sharpless. I did not get that idea.

Secretary Farnsworth: The Crescent properly grown is a large yielder, medium size berries, of medium quality and fairly good shippers. In some markets it is more profitable than other berries, in the market which I grow for we find there is not enough extra price in the finer varieties, as a rule, to compensate for the lesser yield. In fact my market plantation has just two varieties, the Lovett and Crescent. I have another experimental patch growing from forty to fifty varieties, some good and some not good, some promising and some disappointing, but we depend upon the Crescent and Lovett, and the others are a side issue. The Greenville has done well, but our market is a peculiar one; it is the early berry that pays us, and the Crescent being early we get enough better price to compensate for the little difference in size. We find it a hardy berry and I think it is not a poor shipping berry. We have no trouble to ship it to Saginaw, Bay City and other points. Of course they must be picked very close. We realize that they ripen up in the crate. We aim to pick them, in the height of season, every day; pick half the patch one day and the other half the next, and sometimes when they are rushing us too fast we go over them every day and pick them a little green. I have been trying an experiment for ten or fifteen

years to find something better, but it would have been money in my pocket if I had planted Lovett and Crescent straight through.

Mr. Hunt: In our section (Cleveland) the Sharpless will bring about four cents a quart above the other smaller kinds. We have had the Sharpless for a number of years and still hang on to them and get as many bushels to the acre and more money, and it is adapted to our soil. I have some other varieties, but while I have the Sharpless people say it is the finest thing I have, and simply because the land is suitable to it.

Mr. Aultfather: I live in a neighborhood where berries are grown for market. One man told me that in the season of 1894 he sold a great many berries, more berries than I did, and that his net amount for those berries, I think, was 54 cents a bushel; and another man, 46 cents per bushel. Some of my finest berries were sent to Canton every day last season, and I had a good many Crescents. When berries ran high I threw in some of the cheaper berries, and my average last year was a little over \$1.87 clear of all expense on my own crop of strawberries. Even at four cents a quart more than any other variety you better have a good variety of berry because you do not have so many to handle, and do not pay out so much for labor.

Secretary Farnsworth: Now, the point that I think is brought out most prominently in this discussion is in regard to the soil. Mr. Hunt's and Mr. Aultfather's is heavier than mine. My soil is not adapted to the growth of the large berries, but I would prefer to grow the large berries, the best in the market, if I could do it as profitably as the small article, (not an inferior article). The Crescent could not be called an inferior berry. It is smaller; you might say inferior in size.

Mr. Whitney: I guess there has already been more talk on this subject than is necessary. Each one will have to do according to his own notions and ideas and it is useless for one to recommend any variety to another. I understand Mr. Aultfather is successful with the Sharpless. I would not undertake to grow the Sharpless for 25 cents a quart. I would not have them on the place. The Haverland is a strong berry; and another berry I plant more of than any other, that Mr. Farnsworth spoke of, the Crescent. And the Warfield I can pick the full season through, and my experience is that the Warfield is better shape and flavor and better size, than any other, and I can do the best with it. I cannot do anything at all with the Sharpless. Each one will have to do what he finds he can do best.

Mr. Scarff: We grow the Haverland almost altogether in our locality. I suppose there we would get a better yield; perhaps no better than the Crescent, but fully as good, and a better quality berry, and a great many of our Haverland go up to the Toledo market and perhaps down to Dayton.

A Visitor: I am not a member of this society, but I would like to

say a word about the Warfield berry, about which very little has been said in this discussion. I consider the Warfield a better money-maker than any other variety. I have raised the Haverland but I consider it to be the poorest berry there is, poorest in yield and poorest in quality. The Warfield is my standard. It will produce as much as the Crescent. I have raised both. It is much superior to the Crescent in every way.

President Cushman: If you have discussed this strawberry subject all you desire, we will take up the program. The next paper is by R. H. Hunt, Euclid, Ohio.

WHAT EFFECT WILL THE KIEFFER HAVE UPON THE SALE OF OTHER VARIETIES OF PEARS.

By R. H. HUNT, EUCLID, O.

To commence with, I doubt that the Keiffer is any nearer being a pear than the mule is a horse. I think the quince is the father of one and the jackass of the other. Suppose, for instance, there should be brought to the thriving city of Canton one hundred thousand mules, and they were here to be sold for any price that was offered. Would not that affect the sale of the horse? It would be only a short time when the majority of the Cantonians would be seen trying to drive mules.

Mr. President, this is a question which I wish it had been assigned to some one else. As I know that the Kieffer has strong friends in the nurserymen, especially those that grow large quantities of the trees for sale. And when I tell them that it has the same effect on the sale of the *finer* varieties of pears, as the Chinese laborer has upon the American laborer, it will probably bring some of them on their feet, and then you will have the other side of the question presented in better shape. The old saying, there are always two sides to a question.

In answering this question I answer from the experience that I have had in handling from two to three thousand bushels of pears a year for the past nine years in the Cleveland market. And I *distinctly* remember the first peck of Kieffer that came into Cleveland. I secured a specimen, and it was such a beauty that I could hardly wait for it to get into condition when I thought it would be eatable. Gentlemen, it *never* got there. When I hear any one say that they have enjoyed eating a Kieffer I wonder if they had any other varieties on hand, such as Sickel, Sheldon, Anjou, Duchess, Lawrence, Winter Nellis, etc., and also it brings to memory a story. At the time of the Mexican war a party of soldiers were cut off from their base of supplies, and were forced to kill a mule in order to *exist*. In after years one of the party became a prosperous farmer, and thinking how good the mule tasted, took special pains to fatten one, and have it prepared in the most appetising way, but could not eat it. Why? Because porterhouse and mutton chops were in sight. And when horse meat is put on the market in large quantities, and according to reports from the northwest, where the price of fat four-year-olds are only worth from five to eight dollars, the juicy steak will shrink in value, as our finer varieties of pears have on account of the mongrel Kieffer.

The price of the varieties of pears that come on the Cleveland market at the same time as the Kieffer has been steadily decreasing as the quantity of Kieffer increased.

This season there have been more of the latter variety than ever before and less of the others, and to-day it is almost impossible to sell good Duchess.

Why? Because most every store-keeper has a lot of Kieffers on hand. They bought them cheap and they sell them cheap, and the majority of people like to buy anything that they think is cheap, if it only looks well, and that is the Kieffer all over.

Mr. Ford: I have eaten in the season of the Kieffer pear the most delicious pears I have ever had in my life, the most satisfying, the most refreshing.

Mr. Whitney: I must say some good words for the Kieffer. I have grown some Kieffers that I thought were quite nice pears as to quality. If I could get a good Seckel or Bartlet I would not take a Kieffer. As to the quality of a majority of those that are on the market, I must agree with Mr. Hunt that they would be miserable stuff. In their season they are far ahead of the Anjou. I can grow Kieffer pears for one-tenth what a good many people call better varieties, can be grown for.

Secretary Farnsworth: I am considerably interested in pears, and I am a little surprised to hear anybody place the quality of the Kieffer ahead of the Anjou. I would rather have one Anjou than half a dozen Kieffer. Kieffer is a good pear to can, but for eating purposes I should consider it worthless.

Dr. O. W. Aldrich: When I first saw this pear after it came into market and I tried to eat it, I was unfavorably impressed with it. This year I had a young tree that bore so very well that before I knew it the limbs were breaking down, and I let them remain on the tree until about as late as I thought it was safe, when I picked them, put them in a box and covered them up. I wrapped them up in paper and put them away and in probably three or four weeks I took them out. A great many persons who tasted those pears said that they were good pears. They were juicy, but they were not good to me beside the Anjou. But people who do not know what a good pear is think that the Kieffer is a good pear.

Mr. Ford: A pear that will sell for less money and suit the people just as well, and satisfy some better, I don't see any objection to growing that kind of a pear and putting it into the market. There is another point in regard to pears. There is no pear that is fit to eat unless it is in condition to eat. Now if you go into market you will hardly ever find a Kieffer pear fit to eat. They need to be properly handled and properly ripened, and for canning they should be in a condition fit to eat as all other fruit. If a person cans a green pear he will have a green pear when he takes it out of the can. At our house in canning pears we pick them over several times. We never can a picking of Bartlets as they come to us. They would be canned at at least three different times. We pick out those that are in a condition to eat and then we get the flavor in the pear, and it is just so with the Kieffer pear.

Professor Lazenby: It is a good illustration that we cannot dispute taste. Some years ago in a New York horticultural society a member wrote to six of the best pear growers in the United States and asked them to answer this question, If pinned down to just one pear, for eating quality, which would you select? And everyone of those six, including Patrick Barry and J. J. Thomas, named a different pear.

Question: How can we counteract the injury done to our interests by over-zealous doctors and health officers, as happened in the case of grapes and blackberries? O. W. Aldrich.

Dr. Aldrich: I do not know why I should be called upon to answer that question unless it is to know whether there is a legal remedy. I suppose there is no member of the society but should answer as readily as I from any other standpoint. When we consider that matter, I will say this, that there probably is no legal remedy except to take away the powers of the health officer, or the doctor, whoever he may be. It is always presumed that a sworn officer does his duty to the best of his ability. If that be true, the only thing we could do would be to educate these health officers, to know what the facts were in a case and induce them to make the proper reports. So far as any injunction or other legal proceedings, there would be no legal remedy. The only remedy would be to either vacate the office or instruct the men who fill the position.

Question: Will it pay to evaporate raspberries? Wm. Miller.

Mr. Miller: That is a question which can be settled by arithmetic. Some years ago I did a little of that business, and we learned that it required three quarts of fresh berries to make one pound of dried fruit. Knowing this fact almost anyone can cipher out for himself whether it will pay him or not. I was growing a good many berries, and I made it a rule to evaporate when the price would not exceed five cents per quart. The price of the dried product for many years has ranged from 15 cents to 28 cents per pound in New York. I see now it is quoted at about 19 cents, which would make the grower about six cents per quart for his product. Anyone knowing the condition of his market and the prices of his fruit can figure it out for himself.

Professor Lazenby: Under this head I would like to ask if any of the members here have had any experience in gathering them for evaporating by battering on the bushes, not picking? I understood that in New York last summer that persons simply carried trays and batted them off.

Mr. Woodard: Another question: How can our dry product be kept from becoming wormy?

Mr. Miller: In that regard, the product should be put into tight boxes. In regard to picking the berries for evaporation, I know that it can be done very nicely. They can be left on the bushes longer than if they are picked for market.

President Cushman: We have had a long session and have prac-

tically exhausted the program for this afternoon. I think it would be advisable for us to take a recess until this evening.

And thereupon on motion a recess was taken until 7 o'clock P. M. of same day.

EVENING SESSION.

Thursday, December 5th, 1895. 7 P. M.

Meeting called to order by the President.

Executive committee for the ensuing year appointed by the President: N. H. Albaugh, O. W. Aldrich, and Mr. Ohmer.

The President: Our next meeting, being the February meeting; perhaps we might as well settle the place now as at any other time. We are ready for invitations for holding the February meeting of this society.

Mr. Ohmer on behalf of the Montgomery Society invited the society to meet at Dayton, and Prof. Lazenby presented the claims of the Columbe Horticultural Society.

It is moved and seconded that the place be balloted for, as has been the custom at previous meetings.

A ballot is taken and results in Dayton being chosen by 20 votes, Columbus receiving 4 votes. Dayton is chosen as the place to hold the February meeting.

The President: The question of deciding where the annual meeting will be held has been suggested; we ruled last year that it should be settled at this meeting; at the annual meeting we should choose the place for the next annual meeting. Invitations for holding the annual meeting I suppose then would be in order. Is any one ready to invite the State Society for the next annual meeting?

Secretary Farnsworth: Mr. President; I might say that S. R. Moore told me they wanted the next annual meeting, but they wanted to work up a little interest through the board of trade, etc., and he hoped the action would not be taken until the February meeting. He was obliged to go home last night, and he was quite anxious to have the next annual meeting at Zanesville, and I think I ought to make that statement for him, as he is not here.

Mr. Ohmer moves the matter be deferred until the February meeting. Motion seconded. Carried.

Mr. Miller: If it will be in order I would like to introduce a resolution.

The President: I believe it would be.

Mr. Miller:

Resolved, That the Society recognizes the value and importance to the horticulture of the state of the field work of the entomological and botanical department of the experiment station, and we recommend the continuance and enlargement of the work by the station authorities.

Resolved, That the members of this Society urge upon the legislature the necessity for increased appropriation to carry on this work.

Mr. Aldrich moves the adoption of the resolution. Seconded, carried.

Mr. Aldrich:

Resolved, That the thanks of this Society be returned to the Stark County Horticultural Society for its hospitable reception of this Society; to the press of the city of Canton for its full reports of our proceedings; to the city authorities for the use of the rooms for our meetings, and to the exhibitors, who, without any indusement n the way of premiums, have made such a creditable display of flowers, fruits and vegetables.

Motion seconded, carried.

The President: I want to call the attention of the society to one matter that perhaps I am interested in more than others, as to a statement that I have made, at the state fair meeting at Columbus in a paper that I read there in which I said that the Ohio Horticultural Society was organized in 1852. Now what has caused me to bring this matter up is that I have seen it stated that it was organized in 1847. I will give my authority for making the statement that it was organized in 1852; I want to do this in justice to myself, and perhaps it may throw some light upon the matter that you all will be interested in. When I undertook to write the paper "Fifty Years Progress in Horticulture", I began to look around for dates and facts in regard to what had been done for the last fifty years, and of course I was interested to know when our state horticultural society was organized, and I find in the Ohio Cultivator, vol. 8, September 15th, 1852, the following: It is headed "Ohio State Pomological Society", and then goes on to say—"The fourth convention of nurserymen and fruit growers of Ohio was held in this city (Columbus), etc., A. H. Ernst of Cincinnati was appointed president, F. R. Elliott and J. A. Warner, Cincinnati, secretaries. During this convention a constitution was adopted, and the following permanent officers elected: President, A. H. Ernst, Cincinnati, Vice-president, J. A. Warner, Cincinnati, Secretary, F. R. Elliott, Cleveland, Treasurer, William B. Bateham, Columbus."

Now I consider that the Ohio Pomological Society (which finally became the Ohio Horticultural Society) was not organized in 1847; there were four or five annual conventions held previous to 1852 which did not have permanent officers and did not have a constitution and by-laws and a membership list. Now I give that, because I feel that the statement that I made ought to have this further explanation.

Mr. Ohmer: They had added to that the Grape Growers' Association.

The President: The Grape Growers' Association developed nearer 1860 and existed for seven or eight years and finally came into and was absorbed in 1865 or along there into the Ohio Horticultural Society.

Mr. Ohmer: It occurred in Dayton; I remember the time well.

Mr. Ford: If I remember right the time of the absorption of the Ohio Grape Growers' Association was at the time they adopted the name of the Ohio Horticultural Society.

The President: Yes, sir, it was at that time; I would like to say further that out of thirty-two years of the Ohio Horticultural Society, eight of the meetings have been held in Columbus, over one-fourth.

We have left over from our afternoon session the paper by Professor Lazenby on "Horticulture in our Common Schools." It is both natural and right that we should take it up at this time. We will listen to your paper, Professor Lazenby, on 'Horticulture in the public schools.'

(Paper read by Prof. Lazenby, as follows):

HORTICULTURE IN OUR COUNTRY SCHOOLS.

BY PROF. W. R. LAZENBY.

In the early educational history of this country, when the forests covered a large portion of the land, when people lived in log houses built with their own hands, and the school-houses were constructed in the same manner, the boys and girls grew to be men and women of great force of character and strong personality.

Although the strictly mental training at this time was confined to short hours, the manual training received in clearing the forest, building homes, making farms, as well as the tools and implements to work them, called forth the best efforts and developed elements of success. But the pioneer period is past, the land has been cleared, the farms have been made, the towns located. Building and manufacturing are now done by trained mechanics; farm work is done mainly by machinery, and there is comparatively little for the boy or girl to do. Little at least to call forth energy, develop observation or mature judgment. What we need in addition to the mental training given at the schools of our time, is the force and skill developed by the manual training of our fathers.

Horace Greeley once said: "When I was ten years old, my father took the job of clearing off the mainly fallen and partially rotten timber—largely white pine and black ash—from fifty acres of level and then swampy land; and he and his two boys gave most of the two ensuing years (1821-2) to the rugged task. When it was finished, I, a boy of twelve years, could have taken just such a tract of half-burned primitive forest as that was when we took hold of it, and cleared it by an expenditure of seventy to eighty per cent. of the labor actually bestowed upon that. I had learned in clearing this, how to economize labor in any future undertaking of the kind; and so every one learns by experience who steadily observes and reflects."

Manual or industrial training is fast becoming a popular adjunct to our city schools, and is helping to solve the problem of what to do with the city boy. If something similar was introduced into our country schools it would be equally helpful in solving the problem of what to do with the boy and girl in the country.

Our country schools are being graded, and in many rural townships high schools have been established. It is here that I especially urge the introduction of

study and training in horticulture! The necessary land for such purposes could be easily secured, and the necessary tools and appliances would be comparatively inexpensive. The cultivation of flowers and ornamental shrubs and trees, a miniature model kitchen or vegetable garden, small plantations of fruit, could be easily undertaken. The operation of propagating plants by seeds, cuttings, grafting, budding, etc., the collection and study of weeds, and of the more common injurious and beneficial insects, together with the best remedies, a thorough acquaintance with our native forest trees and shrubs, our common birds, grasses, etc.; all this might be accomplished and could not fail to arouse interest and develop taste for scientific thought and investigation.

In addition to the direct practical value of such training, it would cultivate the children's æsthetic faculties, and develop an appreciation of the beautiful in nature and in art. It would mean an improvement in our school-house grounds, and the proper adornment of these would tend to sweeten and purify the lives of the whole community. By the adornment of our school grounds I do not mean any costly expenditure, for it is the conception of an uneducated, not to say vulgar mind, that thinks the beautiful and the costly are identical. I should like to see the grounds about every country school-house so managed as to give them landscape effects. What we mean by a landscape is a picture; a picture with one central thought or idea running through it. We have all seen places that we instinctively call cosy and homelike, and may have wished that we were skilled enough to sketch the scene, or at least had a camera to take the view that appeared so pleasing. This was because a picture was presented to the mind. Perhaps you did not analyze it, possibly you could not tell the elements of which it was composed, yet the picture was there. It attracted your attention.

We are slowly learning that it is not trees, nor shrubs, nor flowers that make a picture, but the proper arrangement of trees and shrubs and flowers. Brick, and stone, and wood, only give us architectural effect when properly arranged.

Take a view of the immediate external surroundings of the homes in any neighborhood. To the observing eye does not each little plot of ground about the house tell much of the characteristics of those who dwell therein? Here we see good taste and order, there vulgarity and disorder. Here mathematical precision, there chaos and confusion. Here you see evidences of much labor, but all misdirected, without skill or knowledge. Again you see evidences of taste, but too much was attempted and the lack of time and means result in failure. Here we see a profusion of trees, shrubs and flower beds, without any design, a mixed nursery and not a harmonious landscape. There we have neither trees, or shrubs, nor flowers, and the house looks naked and desolate. Every phase of human character is shown. We have a reflected portrait, a sort of mental photograph in the grounds about every house, of the family that occupy it.

If we have beautiful school buildings, with beautiful surroundings, the inference is inevitable that we shall have noble teachers; teachers who can help in making a beautiful world still more beautiful.

It may be said that the introduction of shopwork as a form of manual training in our country schools is more practical than horticulture. But is this true? Let us consider. While horticulture is one of the youngest it is one of the most rapidly developing arts in this country. The fruit interests alone of states like California, New York, Ohio, Michigan and others, are great and constantly growing. The forcing of winter vegetables and the cultivation of the finer products of the kitchen garden are rapidly extending, and becoming more and more profitable. Commercial floriculture is developing with marvelous rapidity and bids fair to soon become one of the most important branches of horticulture. According to

the census of 1890 the annual product from this business is over twenty-six million dollars. The Society of the American Florists, one of the strongest distinctively horticultural organizations in this country, has for years persistently urged the importance, the necessity, of schools or departments of floriculture. Perhaps it is doubtful if there is any industry of equal extent and usefulness, so entirely wanting in opportunity for instruction and training. With the exception of the Shaw Botanic Garden at St. Louis, I know of no place where one who wishes to become a practical florist can go for guidance and instruction.

I have received letters the past year which testify that young men and young women are looking toward floriculture as a vocation which offers many and signal advantages. It is a vocation especially adapted to women, and several thousands are already engaged in it.

We should also remember that a general home interest in flowers and ornamental gardening is rapidly developing.

It will thus be seen that by a broad and liberal interpretation, horticulture embraces many different divisions and in each of these there is a growing demand for instruction and training.

At what place can this be so well begun as in our country schools? Education by the state is something more than a business enterprise or mere commercial speculation. True education is based upon philanthropy. It is the duty of the state to provide and extend it: to furnish the education adapted to the needs of our citizens, be the demand great or small. The cultivators of the soil outnumber all other classes of our population. In these years of general business depression many are anxiously seeking for instruction in the various branches of horticulture. Never before in the history of our country have so many small holdings of land been used to such good advantage.

Probably no class of our population are giving more earnest thought to the different economic problems now facing this country than are the horticulturists. I am certain that no class is more eager to receive the instruction and inspiration of science. Should not this subject of practical horticulture in our country schools be thoroughly agitated, and brought before the attention of every rural community? It appeals to every practical man. In its divisions and by its methods it furnishes technical training, useful knowledge and intellectual culture.

If you say there is no time for such training, then time should be made for it: I have yet to learn of a country school where certain subjects could not well be omitted or postponed in favor of this.

To train the eye and hand, to stimulate the power of observation, to awaken an appreciation of the beautiful, in short to develop all the faculties of the body and mind is the aim of modern education. What better than horticulture can aid in securing this end?

The President: This paper is open for discussion.

Mr. Albaugh: The man that talks about the schools of the country and their capabilities and their future usefulness comes very close to the heart of the man who drew the bill that is now known as the Albaugh-Workman Law that governs all the country schools of the state of Ohio. If the Professor or any of you want to see the workings of that law fully established I wish you would come to Bethel township in Miami county, southern Ohio, where my home is, and you would see just such a sight (I mean s-i-t-e) as the Professor has described, on a beautiful, rolling piece of ground that overlooks and over-tops the little town of New Car-

lisle a few miles away, and you can see over Springfield a few miles away, and you can turn round and see the spires of Piqua a few miles the other direction; with two acres of ground laid out with neatness, with roses planted around the front yard and clematis running up against the beautiful building we have, and if you speak of the inside, fifty of as bright boys and girls as ever wended their way to school in the morning. That is what we have. And I fully agree with the Professor in his views. We have a botany class, and the boys and girls go out in the spring and study the flowers and leaves; we have a geology class and rocks are brought in and studied, and we have everything that you have in the city schools of this city, of Dayton, or Cleveland or Columbus, and we have the pure hearts and sound minds of country boys and girls. We astonish everybody that comes there to lecture, and we have a course of lectures there every winter in that beautiful building, and when the two rooms are thrown together we have an audience room that will seat six hundred, and I only wish we could have the Professor here to come there on the Friday after Christmas and deliver us a nice lecture at the Farmers' Institute that we are going to have of our own volition, during holiday week. I wish the Professor himself could come there, and I think he could add another chapter not only to his paper, but add another quart of enthusiasm in his heart for the same thing out in the country. I think that is one of the studies that ought to be pursued in every school and have it go into the surroundings, just as we endeavor to teach it right there. (Applause.)

Mr. Selby: Since I have been engaged a large portion of my life in connection with school work, I feel like expressing my appreciation and approval for as much as it may count, however small that may be, for the thought of the paper, and my appreciation likewise of the statement of what has been accomplished in that line. I am thoroughly convinced, as one who has gone through a business experience as well as the experience of a farmer's boy, that there is no art practiced by mankind that will apply more strongly to just such development as is needed, than this art of horticulture, and there are no sciences anywhere under any circumstances, that certainly tend more fully to develop the proper spirit not only of society but the proper spirit and attitude toward life, than does the science underlying this art.

The President: The question box for this evening has a few questions and these follow next in order. First question that I will read is: "What is the most practical and economical plan of wintering squashes and winter pumpkins in large quantities?" If any one can answer that question I'd like to have it done. If you cannot do it from experience, perhaps you can give it from experience of others that you know of.

Mr. Albaugh: Mr. President; I was going to say that I know of a woman who buys sweet pumpkins and squashes, puts them in one corner of the kitchen, and covers them over with a curtain, nicely, where

they are warm, and in that house they eat pumpkin pie all winter; but when you are talking about a large quantity that is a different matter altogether. You cannot keep them in the cellar, because they mould, you can't bury them like we used to bury apples and potatoes, and you can't very well run your steam pipes in the building and keep it just in the right kind of temperature, and so you are at a loss if you have large quantities. I know a good housewife that kept them under the bed.

Mr. Ford: I am a little surprised that Friend Albough when he knew how to keep a small quantity, couldn't have added and said: build a big building that will have the same conditions of atmosphere.

Mr. Hunt: In Cleveland, on the west side, there is a man who has a large building and he keeps them on racks, not more than two deep, and keeps a stove in the building to keep a uniform temperature, and some of the squashes I notice they are very checked, and the scales of Hubbard squashes looked as though it had come in contact with so much heat and had a kind of yellow look and become very hard, and that way they are kept by large growers. I have kept a few myself, and this year I have put them around on a steam heater pipe, and I have kept them in the upper room, in a cold storage room we have, and using hard coal in the room below keeps even temperature and there we keep them quite well, but they have to be placed on racks; if they are put in a pile they decay very quickly, if they are bruised in any way, and they have to be sorted over, same as apples.

Mr. Ford: There is one thought that has not been mentioned in regard to keeping these things, and that is that it is useless to undertake to keep them unless they are thoroughly ripe, have a good hard shell on; if not they will decay very quickly, I don't care what the temperature is.

Mr. Faust: Mr. President; I stored several hundred squashes of the Hubbard variety at a temperature of 65 over a boiler that is kept at a temperature of about 80 in the green-houses and the temperature run uniform, because it was separated from the cellar in which they were stored right above, by two floors; if you have them in direct contact with sharp heat it will destroy vitality and keeping quality.

The President: What is the most practical and economical way of destroying the green cabbage worm?

Mr. Ford: The best way is to catch them and kill them.

Mr. Whitney: The simplest manner in the world to get rid of the cabbage worm is to take a pepper box, get some insect powder, add flour if you want to be a little cheaper, and sprinkle it on, kill every one of them in five minutes.

Mr. Lawrence: The best way is to catch them and go fishing with them; they are the best fishing bait we have got.

Mr. Elby: We use slug shot as the best thing.

Mr. Scarff: I have a man on my place who uses dust or dirt,

throws a handful in each head; says it is just as effectual as any powder he can get hold of; he has tried it two or three times.

Mr. Faust: You will find in planting cabbage that oftentimes you will need a little nitrogen and with that and a little gypsum and applying it thoroughly you will find the worms a little sick next day.

Mr. Hunt: I had come cabbage that were badly infested with the cabbage louse and also the worm, and I thought they were completely destroyed; and I told the man to go into the road and get this clay dust, and he puts about twice right over the whole head—they had just commenced to form; well I told them that would be in the head certainly. It killed the worms, it killed the cabbage louse, and they came on and made good heads, and there was a very little dirt in the outer leaves, the rest were all right.

Mr. Whitney: You may kill all the cabbage worms and two days later the worms will be just as thick as ever, just about once a week, and if you put that much dirt in the cabbage once we would like to know what kind of cabbage you will have before the season is over.

Mr. Wise: I think from what little experience I have had in raising cabbage the best remedy is just the manure and then tillage.

President: Are tight crates better for shipping small fruits than ventilated ones?

Mr. Albaugh: They are not; you want some ventilation.

Secretary Farnsworth: You know in the last year or two we have heard that ventilation was not right, and tight crates were all right. Well, they are, and they are not. Now we use ventilated crates, and I think in general practice they will be required. It is quite probable that if the fruit was thoroughly aired and cooled and put in just right condition that we might ship it in tight crates, but as it is ordinarily handled, I think the ventilated crates are still a necessity.

Mr. Albaugh: Mr. President: For a number of years I was a small strawberry grower. I mean I grew them in a small way, and I am a small man, and grew small berries. And I sent to Boston or some place east, and got some boxes and they were tight with a tight cover on; and picking them in the evening and taking them to town in the morning I found they would all be mashed down before I could get to market. So I tried picking them and leaving the lids off and then drove to market and they turned out all right; but we never could leave those lids on and have them tight down, they would all melt down, settle down, they all got soft all through.

Mr. Aultfather: I have had several crates of berries shipped to me and the top mostly on, and the top tier contained the most mouldy berries, and I think if the lid had been open and the steam could pass off it would have been all right; I think if the berries had been thoroughly cooled off before going into the crate it would have been all right.

The President: What is the best apple for all round purposes? I

think the question was answered this morning by a description of that apple that begins to ripen in July.

Mr. Duer: I met an incident at New Orleans concerning the best apple; I sent down three lots of apples and got three premiums; and what apple do you think got the first premium?

Secretary Farnsworth: Grimes' Golden?

Mr. Duer: That's right.

The President: That knowledge is worth more than a passing notice. Grimes' Golden is not known for half the value there is in it.

Mr. Ford: We have got more Grimes' Golden trees than any other.

The President: The people don't know about that favorite, do they?

Mr. Ford: No, I don't think they do. Last year we sold our apples in Indiana; they were packed in every kind of barrel we could get; and among them was about two-thirds of all we shipped something like 200 bushel, were Grimes' Golden; they were rather small in size and we expected that the man would rather kick on them on account of the size, but we were agreeably surprised when he wrote back that he wished we had more of that kind of apple, because they got there in the best condition of any he had, and suited the people the best.

Secretary Farnsworth: I want to add a word; we find it a healthy, hardy, upright, symmetrical tree, a grand apple to eat, a good keeper and good to sell. I remember several years ago I had a load of several varieties of apples and took them to Toledo market, and a jeweler there wanted a barrel of Rambos for his own use; I delivered them to him, and handed him a Grimes' Golden to taste, and he said, "It is too cold to eat now," and he laid it to one side. I drove on to the next place about two squares distant and before I had delivered the apples I had sold there, the gentleman came running after me and wanted a barrel of Grimes' Golden. I said they cost ten cents a bushel more than the other varieties, he said, "That don't make any difference, I want them;" he had tasted them and followed me up.

Mr. Ford: Speaking about keeping qualities, one year we made pies of Grimes' Golden the 26th day of June.

The President: It is one of the richest apples to look at when it is in proper condition to eat of any variety I know.

The President: Here is a question of a very general nature; I almost feel like not reading it—How does fruit growing compare with farming as to profit?

Secretary Farnsworth: Too big a question for so late in the day.

The President: How does the Elberta peach compare with other standard varieties as to value?

Mr. Albaugh: I believe that in Ohio as well as in Kentucky and further south the Elberta will come to be one of the very best. Hardier in the bud than any other of the yellow peaches; it bears young and does

not need thinning, and withstands the pest of insects better than a good many of the other varieties. It is as big as a Crawford, late, and they are the best shipper that we know of to-day. They can be shipped four or five days in a common freight car, and come out in pretty good condition; as a shipper they equal the Ben Davis in apples.

Mr. Aldrich: We haven't many trees, but the Elberta bore a crop in 1893 when the frost had killed the other varieties. They stand more late frosts than other peaches, and stand shipping a great deal better.

Mr. Aden: I have one tree and last year it bore a very fair crop; year before last; last year it did not bear and this year of course the May frost killed our peaches and there were none on the Elberta, and the Thurber right beside of it had quite a fair crop, and another just a few feet away bore a very fair crop; I found in my orchard that Smock was the only yellow peach that did have any on and the Smock had a very small number on it, Elberta had none, but the white peaches, Thurber, bore not a full crop, but about a third of a crop.

Mr. Ford: I saw in the Hale Brothers orchard in Connecticut as fine a show of peaches as ever I saw in my life, of the Elberta variety. The trees did not seem to be very full, but the peaches were very large, a nice color, and they were just ready to begin to pick in a day or two, so they were just in the prime to see them on the tree, and they were really nice peaches.

Mr. Albaugh: The nicest peach I know of to-day.

Mr. Rocksill: I am requested to ask somebody that knows something about the Crosby peach to tell whether it is a desirable peach or not.

Mr. Ford: Perhaps I can answer that in a way. We planted an orchard of five thousand trees and two thousand of them were Crosby; that gives you some idea what I think of it. I have had from Hale Bros., two years previous to this year, some of those peaches and I was very much pleased with them. I saw them growing in Hale's orchard and they had just begun to ripen so that we got a few specimens that were fit to eat; as large a peach as I saw was one that I picked off a tree of that variety, but there is this thing about it—they will bear so full that unless they are thinned they are very small. Mr. Hale told me that his instructions to his hands were to pick off six and leave one; he said he couldn't do it, but he gave instructions to the help that is what they have got to do, and the consequence was there were enough peaches on the trees to fairly weigh the trees down then, and great, big, nice, red-cheeked, or splashed with red, as handsome peaches as I ever saw in my life. They have the smallest pit of any peach I have ever opened in my life in proportion to the size, and they are a peach that we think a good deal of, or else I shouldn't have planted two thousand out of five.

Mr. Albaugh: Mr. Hale's experience in Georgia with the Crosby wasn't very flattering. He planted eight or ten thousand of them, and

while other people were getting good prices for the Elberta, he was compelled to sell them to a canning factory for 25 cents a bushel; they were too small and did not bear shipping; maybe if you would thin them very severely they will be larger, but we are afraid to plant many Crosby's south on account of the size, they aren't big enough to catch the eye in the ordinary market after the Elberta have been marketed, and they come in after the Elberta. My own opinion is, so far as the information I have been able to get, that the Crosby is a valuable peach for all this northern country, and where you thin them down, as Mr Ford says they should be (and I have no doubt that is correct), you will frequently get a crop of Crosby's when you do not get any others.

Mr. Ford: One other word;—they are the finest growing tree I have ever seen; in our orchard we planted the first year third class June buds, they wouldn't average over ten inches or a foot, and to-day those trees are four feet higher than I am, and only three seasons growth. I wish I had a photograph here that I had taken some time ago with myself standing up beside one of those trees and a long row, something like 44 or 45 rods long and, you can see the whole length of the row and the trees were generally—the one that I stood beside of was certainly four feet taller than I can reach, and grown from one of those little ten inch growth of June buds.

Mr. Albaugh: I do not know as this is a sparring match with the gentleman from Portage county, but I want to tell you that the best tree to plant is that same tree that he is talking about—the third class tree; he knows that. You take a tree that is one year old and is five or six feet high and it don't get there in good shape. We don't plant that; in our big orchard the trees of the Elberta we planted were about a foot high and as thick as a lead pencil. We got them on the south shore of Maryland, and that was the kind of trees we planted, and in fact at three years old those that were June buds about a foot high had a crop on when none of the balance had; and at four years old they are just as big as the balance, and at five years old they are a good deal bigger. The one thing in a peach orchard to do is not to set a peach tree over two or three feet high and trim them to a straight stem and you have lots of buds to come out. A man that sets out peach trees up as high as your head don't know what he is doing.

The President: "What has Organization done for Horticulture, and what are its possibilities?" Mr. G. W. Lawrence, of Canton. Ladies and gentlemen, I have the pleasure of introducing Mr. Lawrence.

WHAT HAS ORGANIZATION DONE FOR HORTICULTURE, AND WHAT ARE ITS POSSIBILITIES?

BY G. W. LAWRENCE, CANTON.

Mr. President, Ladies and Gentlemen:

That question was allotted to me to produce a paper at this meeting. I seriously objected at the time for the reason that my health has been very poor for the last eighteen months. That was the main objection I had, and I had other objections; I have been absent from this state and from the society for ten years, and hence am not as well posted as I should be to produce a paper of that kind that would be beneficial. I would say, however, this, that if we haven't succeeded in bettering our fruit condition, I was glad to see when I came back here and drove through the country other improvements that I believe have been brought about by the society. Where we found weeds and fences dilapidated along the road, when I returned here I found the fence corners cleaned up, many places fences torn away, disappeared entirely; I found fine shade trees; I found at other farm houses what Professor Lazenby has been trying to teach us this evening, beautiful flowers where I had never seen anything of the kind before; those are all things that the society has been teaching. But you all know what the past has done for us; the future is for us to do. I think we lack organization; we are organized, of course, but I mean this—that we are not so closely associated county with county as we should be; we don't have that intercourse that we should have; we don't act in that unison that we should act. In other words, we are going it alone to much. I was astonished to-day when I heard the report of our treasurer, Mr. Ohmer, to find that this great State of Ohio, the legislators of this great State of Ohio had actually given us a thousand dollars. I was astonished. I want to say to you, my friends, that three years ago when I left the State of California, the legislature had then appropriated for horticulture of the citrus department five thousand dollars annually, on horticulture proper, as they term it there, fourteen thousand eight hundred dollars; on vitis fifteen thousand dollars; now this all comes in our line, all of it; it is horticulture. That makes thirty-four thousand dollars for the State of California; we are old enough to be its great grandmother. We should be ashamed of ourselves. They didn't only do that, but they appropriated to agriculture one hundred and fifteen thousand dollars. Now I make these statements simply to strengthen the hands of our committees that are going to tackle our law makers this winter. Don't be afraid to ask for an appropriation; the State of Ohio ought to have at least ten thousand dollars for our purpose, they are able to give it, and it would be money well invested, there isn't any question about that. California has protection—I'm not going to make a political speech—they have protection by law, under the law of California, for the destruction of insects. You can't ship a tree from Ohio there that will escape the inspector; if there is any insect found upon that tree they will kill it if they can, if they can't they will burn the tree; they make very short work. Now it seems to me that in this way we can arrive at protection to protect ourselves against the insect, more than we can possibly do by spraying our trees. For instance, here you have Jones and Smith that are spraying their trees, there are Myers and Andrews and so on that live right around there, they pay no attention at all to the destruction of insects; they are breeding them for you continually to destroy, and you are just as well off next year as you are this year. That I believe is all that I wish to say on the subject. (Applause.)

The President: Gentlemen, there are some pretty sound facts in

that short talk, for us to consider as horticulturists. Any further discussion of this question of organized horticulture?

Mr. Albaugh: Mr. President, I was very much pleased with our friends' description of what they are doing in California, and I believe it is true from what I learned when I was there a year ago; but I want to set Ohio right in the matter of something that as a nurseryman of 37 years experience and as one of the officers of the National Nurserymen's Association I think I have a right to do; in regard to trees and our free trade with California. He tells the truth when he says they will kill the insect or they will burn your trees, principally the latter. The insects of Ohio that we have to ship to California are nothing at all to compare with the insects that they have in California. They gave us the San Jose scale from California, and they never batted an eye or shed a tear. We didn't have any maritime or any other kind of laws here, and they gave us one of the worst insect enemies that we could have. The fact is that in California eternal vigilance is the price of fruit and you can't see a single orchard anywhere at all. lemons, oranges, figs or anything else if you want a crop, but you have got to spray your trees so that they look as if they had got a coat of whitewash, or flour had been sprinkled all over them. California is a horticultural country, and it has some sense when it contributes \$34,000. to horticulture alone; I wish we had that in Ohio, and I wish you were to see the wry faces and the frowns I have had made at me when I begged and plead for the pitiful sum of one thousand dollars; when they spend ten thousand dollars to clothe our militia in magnificence to make a little parade, and now they are paying twenty times as much to take that same militia to Atlanta to march them up and down the Midway and Cairo street than it would take to keep this horticultural society in funds rolling in wealth for twenty years. (Applause) I wish we could come before them on this year and not get down to plead for what is our right and what they ought to give us, but that we ought to be able to shake our fists in their faces and say to them, "If you don't give us this five thousand dollars we will see that you don't come back." That scares the average legislator nearly to death. I hope that when we come before the legislature the next winter we will be able to at least get them to continue to give us the pitiful sum of one one thousand dollars; they ask what we are doing, "you aren't doing anything—I don't hear anything of you,—you don't make any political speeches on the stump, you don't talk tariff, you don't talk free silver, you ain't doing this country any good."

Mr. Lawrence: I have no excuse to offer for the people of California; they go ahead and get there; that is their motto; but I want to prepare you myself to meet them more than half way. Next time they introduce scale in your country, or some other animal you don't want, why, do like they do, burn their trees for them.

The President: Gentlemen, we are going to get there just as fast

as possible. At our February meeting I want you to come prepared to discuss insect life, etc., to your full ability.

The President: If there is nothing further on this organization subject, we will go to this list of questions: there is one that has been called for that I will ask you to consider first—"Is there a difference between the Columbian and the Shaffer? That is to be answered by Mr. Ford.

Mr. Ford: Mr. President, I'm sorry that I can not answer the question of my own knowledge; but you are all aware that the Columbian was only disseminated last spring for the first. The consequence is that no one knows just what it is, except those that have had it on experiment. We have it growing and I might say it grows like a Shaffer, but I am unable to say of my own knowledge whether there is any difference or not. The description is almost identical. Mr. Carman who has had it for several years, the editor of the Rural New Yorker, says there is a difference; I think that he makes a difference about like this—that is a little more hardy, the growth is taller, and the fruit is darker colored and more acid. I think that he makes those statements in regard to it after having fruited it in comparison with the Shaffer.

Mr. Scarff: Mr President; I have the Columbian growing and I find some difference in the growth of the plants; the wood is a little lighter colored, but as there was no fruit on them of course I couldn't tell.

Mr. Ford: I think there were three or four berries on ours, but you know how they grow the first year of setting; but the flavor has more acid and more character to it, different kind of taste; they seemed to grow a little finer some way or other.

The President: What is the out-look for plum culture in this state? Professor Green.

Professor Green: Mr. President; I think that if all the plum trees that are planted would bear crops of fruit that the outlook for low prices would be pretty good. There certainly have been a great many plum trees planted, and there are a great many more going to be planted, and if it were not for the fact that most of those or the majority of those trees would not bear a crop of fruit I should say that certainly the outlook was very unfavorable; but still I can't help but think that in a good many localities plum culture will pay, where it is properly conducted, where the soil is right, market convenient, and where carried on properly, I believe that there is still a very good outlook for a great many growers, but I am afraid that a great many will lose money in planting plums in the future.

President: Is there such a thing as a tree blackberry?

Mr. Pierce: There may be, Mr. President; Mr. Childs says there is, but I have never seen them.

Mr. Green: Mr. President; we have had Childs' Tree Blackberry and it never got more than two feet high; I have not been accustomed

to calling that kind of a shrub a tree. It is rather a trifling shrub, and it is the scrawniest, thorniest, meanest thing that I ever saw in my life; never bore any fruit; I do not know whether it is a blackberry or what it is.

Mr. Whitney: I saw plants growing on the grounds of Mr. ——— when he lived in West Cleveland that he said he got from Mr. Childs, and none of them stood over a foot high, but they were spreading out like any blackberry would.

Mr. Ford: I have a letter on file at home from the man that named the tree blackberry. I made inquiry about how long the tree lived and how many years the tree bore fruit, etc., and so on, and I got a reply something like this: that it grew a crop the same as any other blackberry, but the canes grew somewhat more in tree form than any other variety.

President: What is the value of the Japanese Wineberry?

Mr. Lawrence: Mr. President, before I leave I would like to inquire whether the Kelsy Japanese plum has been cultivated so as to know whether they are a success in this part of the country.

Mr. Albaugh: They are not a success; they are too tender.

Mr. Lawrence: We think they are the best plum we have in California.

Mr. Scarff: Mr. President, it is not necessary to take up any time with this subject; as we grow the Japanese Wineberry and see it growing in our country we find it of no practical value whatever. The fruit is very small and sour, it isn't hardy, freezes down two winters out of three.

Mr. Ohmer: Mr. President, its no good. Don't plant it; I did and dug them up.

Mr. Ford: I never saw a bunch of fruit on my place, although I had two or three plants growing for several years. It freezes down every winter to the ground.

The President: I hope you will come prepared to speak of some of these other new fruits, either from what you can learn in any way possible, that is coming from the same sources, Japanese Mayberry, Raspberry, Strawberry, Blackberry-raspberry, and all the berries that are of peculiar name and unknown value.

Question: Shall we plant Ben Davis in Ohio? Mr. Albaugh, you are called upon to answer that question.

Mr. Albaugh: Why not? why not? We are planting apples to sell. And we are planting apples to make money out of, why not plant Ben Davis, especially in central and southern Ohio. The fact of the matter is that the Ben Davis is the most receptive apple that we have in the world. If a man comes to see you, and most of them who are pretty good with their chins and like to talk pretty well, if he sits down and listens to all you want to talk to him, you will rather admire him because

he is receptive, he will take everything you can give him. That is just about the way with the Ben Davis apple, when the housewife gets it to make pies, she can put on a little mace, and a little nutmeg, and a flavor of quince and you can take all the flavors there are in the world. You can't do it with Grimes' Golden. The Grimes Golden stands right up and kicks for its own flavor; but the Ben Davis meekly submits to anything in the world, because it has got nothing of its own. But the fact is you can make a first rate pie or sauce of the Ben Davis, but don't forget to put on a little flavor; and it doesn't do like some one was telling here about picking apples so early; like some other apples, for instance the Baldwin—you know it was said here that when you picked them so early the sun doesn't get a chance to color them. Now about two or three years ago we got our apples from Maine and I got two or three barrels of Baldwins, and the head of the barrel had little cracks in it and the sunshine got in there and it colored them up just as fine as they could be; and the other end of the barrel had little cracks in the head too, and they colored up about the same way, but when I got into the middle of the barrel they were just little bits of green fellows that hadn't colored up at all. Now the Ben Davis doesn't do that; when you open the barrel why it is Ben Davis at the top, and Ben Davis in the middle and it is Ben Davis at the bottom.

In Kentucky we planted an orchard of two thousand trees and we look forward with great anticipation to big money out of them, and I am sure we can get bigger money than I can out of any other orchard. I will still keep a bin of Grimes' Golden and some others for my own eating, and let the others eat the Ben Davis.

Mr. Ford: This reminds me of two instances or two stories that I might tell. There was a good old blacksmith in our town used to say you can make good preserves out of potato balls if you put enough good stuff in to make them good. Now I say don't plant Ben Davis in northern Ohio, they don't grow over an inch and a half through.

Mr. Duer: There was a man at my house in Detroit not long ago for a car load of apples, looked at my apples—and I only had about forty or fifty bushels of Ben Davis and I had forty or fifty of those nice Grimes Golden piled there on the ground floor. Now he says, "If your car load was all Grimes Golden I'd take them." Don't you want Ben Davis? "I don't want them at all, I want the Grimes Golden or that kind of apple."

Mr. Ohmer: To show the difference in tastes some years ago when I was growing fruit I had a thousand barrels of apples headed up ready for sale; a man heard of it, and came to see me, he told me he was from New Orleans, came up to buy apples, had heard I had a load of them, I told him I had, an even thousand barrels; well says he, "What varieties have you?" Well, I told him I had Bellflowers, I had Baldwins, I had others. "Well," says he, "haven't you got Pennock?" "No," says

I, "I wouldn't grow them." "Well," says he, "that's all I want," and went away, "that's all I can sell down there," that shows the difference in men's tastes.

Mr. Bitzer: I want to say a little about the Ben Davis. And the first thing I think Mr. Albaugh ought to draw a line through the state of Ohio and tell us how far the Ben Davis should go. The Ben Davis in the northern part of the state here is no apple whatever to taste. It is no cooker, and you can't make them a good cooker unless you load them with spices and one thing and another to take the flavor away. Now we don't get Ben Davis here for the good of it. I have a tree of them, and I only keep that tree on account of its long keeping qualities, and when we have no other apple we eat the Ben Davis, not because it is a good apple, but because we have no others. I wouldn't advise a man in this part of the country to plant Ben Davis, for I have told a great many of them not to plant.

The President: Is there any other question on this list that you would like to have brought up specially? There are some left—"What can a commercial berry grower do in a year of destructive frosts, when located far from city markets?"

Mr. Aultfather: I would just say I think a man far from a city market would have much advantage over one close to a city market where he had a small farm. There have been no destructive frosts to my knowledge that have been so late that he couldn't plant potatoes, corn, etc., and this year that is what our growers have turned their attention to, many of them, that have bought their feed, have grown their fodder to feed their stock and have raised quite a crop of potatoes and a great many melons as a summer crop, and I think he would have advantage over the grower in the city market or near the city market.

The President: Are there any practical means of preventing damage from frosts?

Mr. Whitney: Mr. President; that is something I never heard of until I got a program and saw it, and if I were to answer in the proper manner and the only way in which I could answer it would be to say no, that is all there is to it; of course we might talk round and recommend this, that and the other, that all fruit growers must know, but I don't think it would be of any practical use. Of course we hear about covering them with straw, and I stated in my paper one of my neighbors did do so, but that isn't practicable with a large plantation. Of course with a small patch and the man has plenty of help and he can be certain a few hours before hand there will be a frost, he can cover them with straw, but in the first place it often isn't possible to know there will be a frost until so near night that unless there is a great deal of help around it can't be done; and then with such freezes as we had this last spring it would take straw very deep and an immense amount of it to save them. Of course fruit growers hear about the accumulation of brush, heap-

ing brush and then burning that for the smoke, but if the freeze is bad enough to freeze substantially every apple, that will do no good. It will, with a very light frost, keep it off. It is said that where the berries are heavily mulched with straw they freeze worse than where the ground is kept bare around them, but that would only apply in light frosts; if we have a severe freeze it will kill them anyway.

December 3, 1895.

To the Secretary of the State Horticultural Society:

"Are there any practical means for preventing damage from frost?" Yes!

A Florida lady having a fine orange orchard, in anticipation of a possible killing frost, prepared brush piles at proper distance apart through the orchard. The freeze came, her thermometer giving warning at two or three a. m. She fired the brush and fuel till morning sun dispelled the frost. Her crop was saved. All others lost crop and many trees.

A practical fruit grower of South California said late frosts were common, and they had adopted the plan of providing coal tar, and combining it with some wood in proper vessels at proper distances apart. When frost came the fuel was ignited and the heat and smoke, in the early morn, saved the fruit. Otherwise all was lost.

A few years since when a good fruit crop was set and promised an abundant yield, the killing frost came. All was blighted save here and there in favored localities. A small orchard below Harris Bros' large brick yard, in Zanesville, escaped this frost and fruit saved. Evidently the heat and smoke warmed the atmosphere sufficiently to prevent frost.

Many other cases could be cited, but these are illustrations sufficient to establish the fact that similar means intelligently used would produce like results.

DR. H. S. NYE,

Of Muskingum County Horticultural Society.

The President: Is an everbearing raspberry desirable?

(Cries of "no", "no good," etc.)

The President: I don't feel like saying no to that; I think an everbearing raspberry for home use is desirable. Certainly, if we can have berries in August, September or October, once in a while a dish of them, it would be very desirable; no one would object to it; as for market value I don't think there is anything in it at all; don't see how there could be.

Mr. Ford: Mr. President; I haven't seen the berries growing on the canes, but at Akron fair, Mr. Gault had an exhibition of his berries there, and you saw this picture here to-day, all of you I presume; he had one bunch there that was in every respect as good as the picture, in every respect—I compared them carefully and the picture is not overdrawn in any particular. Whether it would ever be of any market value or not I don't know, at the same time I think if every person could have a few raspberries out of season it wouldn't be a bad idea, providing he hadn't too many birds to eat them all up. On our place I have given up trying to raise raspberries because we haven't land sufficient to raise enough to feed the birds and I leave the raspberries to be raised by the

neighbors that have more land to put out, more territory, because the birds in every field in our vicinity will take probably an acre at least.

Mr. Pierce: There are two or three points in this matter, that are erroneous; one is, the birds are not around in September at that time—last of August or first of September the birds are gone; there is after that time no bird in this locality; I have noticed it for twenty years. I could have sold this year if I had had them, I could have sold all I could have carried off in Akron for five dollars a bushel. At the place where these plants were growing there was nothing in the way of fruit at the time I was there; they had neither apples nor pears, everything had been killed. If Mr. Gault had left his three crates of raspberries there he would have had quite a good many orders. Of course this may not occur again in twenty years, but I will venture to sell all the second crop raspberries that I can grow. They are very good, a very pleasant quality, and there are a good many of them.

The President: Is peach culture likely to be over-done in this state?
William Miller.

Mr. Miller: I don't know, Mr. President. I wish I did. This question is making our peach growers a good deal of anxiety just now. I understand nurserymen tell us that the demand never was greater for peach trees, and they are being planted over the hills in southern Ohio and along the borders of the Lake; and in these days of agricultural depression our farmers are looking for some crop which they may grow to fill up their empty pocketbooks. They hear the rich stories from the cotton fields of Georgia about the profits to be made in peach growing, and they feel like trying to get a small share of it. Now too, with all this planting, there will be years when there will be a great over-production and an abundance, but in my opinion the production will not be over-done. Many who are planting peaches are not qualified, not the proper persons to grow peaches; they don't know how. It is a study to grow them properly, and a profession. Daniel Webster when asked whether the legal profession was not over-crowded, replied, "There is plenty of room upstairs," and in peach growing, I say there is plenty of room upstairs.

Mr. Albaugh: In regard to the over-production of peaches;—one of them was that you can get rid of more peaches even in the small towns of the state at reasonable, remunerative prices, than you can imagine. I remember we shipped two car loads to the little town of Troy, our county seat, town of less than five thousand people; they were sold readily and at good prices. There was another town in that county that has twelve thousand population didn't get any peaches at all; Sidney lay right above it with a bigger population than that. You take this county here, and it has a population, a city population, with the three towns in it, of probably sixty thousand; that would be twelve such cities or towns as the little town of Troy, that would be twenty-four car

loads or twelve thousand bushels that could be sold in even the cities and towns of a county like this, and when you go to figure that up, and not saying anything about Chicago which is practically under your nose here, with one million seven hundred thousand people, and all with mouths watering for peaches, you have got a pretty good market. The trouble is, peach growers think they are not making anything like fair prices unless they are getting three or four dollars a bushel. The point I want to make is this: You need a big city to get away with a good many peaches, and there is the demonstration of it; we sent two car loads to our little town and they all brought fair prices; we sent some to Lafayette. This town never got a car load of peaches from the South or from Michigan or from any place else. Do you know how many peaches they grew in Michigan this year? Over four million baskets, and shipped them at reasonable prices, and got reasonable prices for them. Mr. Miller himself says in his paper that the result of the peach crop has shown that the peach that can be sold reasonable is the one for general use. A man in Michigan stated in their paper that they publish, the *Prairie Farmer*, that the prices this year have been very satisfactory. When your peaches get bearing, if they ever do, all you need is some kind of system that you don't glut your market.

Mr. Pierce: How about Delaware peaches?

Mr. Albaugh: I don't know anything about Delawares. The Alexander is a good peach, but don't put all your trust in that, because if you do you come in competition with the southern peaches; by the first of August all the southern peaches are gone. The market will take a tremendous amount of peaches, if they don't come too high.

Mr. Whitney: I can say that in the town of Warren, about seven thousand people, probably used three thousand bushels of peaches last fall. I could tell from this—that I know two whole car loads came in there and afterwards part of a car load, as I understood it; and besides that they were shipped in there by express for months, I don't know how many—for two or three months, by the bushel, about every day or every other day, probably five or six car loads altogether.

Mr. Miller: Of the five hundred thousand grown in our locality I don't believe ten thousand of them went outside of the state of Ohio, and I believe the majority of that amount were absorbed by the small towns of the state.

The President: Gentlemen, we have had a pleasant and profitable meeting, and perhaps this evening has been one of the most enjoyable sessions that we have had. We have practically exhausted our program, we are tired; isn't it advisable to adjourn?

Mr. Woodard: Before we adjourn, some of us who were appointed on that committee wish to leave in the morning, and generally have expressed a willingness to work tonight after we get to the hotel: there-

fore if we can reach the hotel as soon as possible and to the room above, we will commence business.

Mr. Rocksill: I want to say a word before we adjourn. If the Stark county society have given you a decent reception, I think I express the views of our society when I invite you to have your next meeting, or any meeting or all of your meetings in Canton hereafter. (Applause.) I haven't heard but one right severe criticism upon your work since you have been here. This afternoon an ardent young horticulturist, or one who was just starting in the business, says, "There is one thing I don't like about this meeting,—and I hate to harrow up your feelings just at the time you are going away and make you feel as though you hadn't done just what you ought to do,—but I think it is best to be honest and fair with you—he said the meeting wasn't near long enough; there was a great many questions that he wanted to ask and wanted to have answered and he knew there wouldn't be a chance to get them in. That was the only criticism I have heard. I have taken great pleasure in the proceedings of the State Horticultural Society, and I know that I express the views of all my fellow-members of the Stark county Horticultural Society when I say, come again. (Applause.)

Mr. Bitzer: That is what I say.

Mr. Geo. W. Campbell who was unable to be present sent the following:

SHORT ANSWERS TO SOME QUESTIONS FROM PROGRAM OF OHIO STATE HORTICULTURAL SOCIETY, DECEMBER, 1895.

What effect will the Kieffer have upon the sale of other varieties of pears?

I should say: Very little; especially upon such varieties as are fit for table use; as the Kieffer as usually grown, and in most localities is too poor in quality for anything except for canning or cooking in some way. For these uses, when well grown and ripened, it has an acknowledged value.

Is peach culture likely to be overdone in this state?

From observation of over sixty years, I should answer: Decidedly not.

What is the value of the Japanese wineberry?

For myself, I should answer: None, in Ohio. The plant is too tender to endure our winters without extra careful protection, and the fruit too poor and insignificant to be worth the trouble.

Shall we plant Ben Davis in Ohio?

I should say: Yes! For although this apple is *not* of high quality, its hardiness, productiveness and fine, healthy growth of the tree, and the handsome appearance and good keeping and shipping qualities of the fruit make it one of the most profitable varieties for the commercial fruit grower. I do not know any other apple that can quite fill its place.

Is there any difference in the hardiness of different varieties of strawberries and raspberries?

I think there is, especially in raspberries, but have not now time to answer more specifically.

Is an ever-bearing raspberry desirable?

From an extended observation and experience of many years, I should answer, that those which have heretofore appeared are *not* especially desirable, and that none of them have proven very profitable or popular. Other fruits seem to supply their place after the usual raspberry season is past; and although they may have some value as *novelties*, I hardly think they will prove generally or specially desirable.

THE RED SCALE OF FLORIDA—A NEW HORTICULTURAL INSECT ENEMY FOR OHIO.

BY E. E. BOGUE.

Only those horticulturists whose work is under glass need fear this late arrival for a great many years at least.

It may make its appearance in conservatories where woody plants are kept for ornament or sale.

Unlike the San Jose scale, the oyster shell bark louse and a host of others of the coccid family, it would not probably endure the severe winters of Ohio, coming, as it does, from the warm regions of the South.

The red scale of Florida, known to science as *Aspidiotus ficus*, Riley, MSS., first became known in this country in 1880 in an orange grove in Florida. It was probably introduced from the island of Jamaica, where it is native on plants of fig and orange.

It is found on a variety of plants, but is particularly destructive to plants of the citrus family in Cuba, Mexico and other places where it is found. It is reported as being found in Japan, Australia and California, but has not been (unless very recently) authentically reported from the last named locality.

Its first known appearance in Ohio was in October, 1895, in the conservatory of the botanical department of Ohio State University on a plant of fig (*Ficus nitida*).

The largest of the female scales are nearly one-half inch in diameter, being circular in outline, brown in color, with a slight redness at the apical center of the scale.

The male scales are about one-fourth as large as the female scales and have a thin flaplike extension on one side. When young, males and females cannot readily be distinguished. Both sexes when young walk about freely, but when at most a few days old they settle themselves on the upper surface (frequently on the under surface) of the leaves. The insect pierces the skin of the leaf and inserts its sucking tube into the soft tissues of the leaf. In a day or two after the insect has settled its body is covered with waste and a secretion from the body, which soon develops into the brown scale. The insect generally seeks the young, tender foliage, and when it settles upon a chosen point a depression occurs at that point, probably owing to the loss of the juices of the leaf at that point, and thereby causing an interruption of the normal development of the leaf. When several dozen settle upon a young leaf its growth is much impeded.

The females having once established themselves on any point never move from it. At about forty-seven days from hatching the males, having developed wings, emerge from under the scale and fly about freely, but having lost all organs for securing food, the remainder of their life is necessarily short and as soon as their natural function is performed they die. The females* about 20 days later begin laying eggs which hatch in a few days, the body of the female shrinking to make room for its product.

No less than five generations have been traced by Professor Comstock in a single season on a potted plant in Washington, D. C. The ordinary applications for the destruction of scale insects would doubtless prove effective in destroying this one.

If anyone thinks he has found this scale the writer would be glad to receive material for identification and to determine the limits of distribution.

Columbus, O., November 19, 1895.

PROCEEDINGS OF THE FEBRUARY MEETING
OF THE
OHIO STATE HORTICULTURAL SOCIETY,
HELD AT
DAYTON, O., FEB. 19 and 20, 1896.

The Convention was called to order at ten o'clock A. M. by President Cushman, in Old Guard Hall, who congratulated the society upon the work it had accomplished and the renewed interest that had been shown by the members since the December meeting held at Canton. He referred to the fact that the meeting was assembled at Dayton upon the invitation of the Montgomery county horticultural society, one of the oldest and strongest members of the state organization in Ohio, and that from the evidences of work in horticulture about the city of Dayton the Montgomery county society must have been a very influential factor and put forth every effort to make its work a success.

President Cushman: The first thing upon the program this morning will be the reports of the local societies.

MONTGOMERY COUNTY HORTICULTURAL SOCIETY.

BY WILLIAM RAMSEY, SECRETARY.

For a full report of what the Montgomery County Horticultural Society has done during the year just closing, members are referred to the printed monthly proceedings which, as has been the custom for a quarter of a century, are bound in pamphlet form at the end of the year for distribution.

For the present it is, perhaps, sufficient to say that there has been no falling off in the attendance at our meetings, nor any diminution of interest manifested in their proceedings; that these meetings have been held every month as prescribed in our program card, and that they continue to be, as they always have been, not only occasions of great interest and benefit to all who attend, but likewise occasions of a genuine social reunion on the part of all who choose to avail themselves of the standing, cordial invitation to meet with us.

The essayists who were appointed at the beginning of the year to prepare and read original papers at stated times, have done well, and deserve the commendation of the society, a single failure only having occurred during the year.

The reports of the various committees, whose assigned duties are to keep members well informed in regard to the growing crops from month to month, were full and satisfactory, especially those made in writing, which sometimes approached closely the character of brief essays.

In regard to orchard crops, it is pleasant to be able to report a break in the uniform series of failures which seems to have been the rule for the past several years. And, it is not, perhaps, much of an extravagance to affirm that every apple tree in the county old enough to bear fruit was in danger of destruction from being overloaded. And the same too, is measurably true of other orchard fruits, except the peach, the buds of which were destroyed by the January freeze.

Our small fruit and vegetable growers, however, have not fared so well as the orchardist. So far as their interests were concerned the season was less propitious. The remarkable drouth which prevailed throughout the entire Miami valley during most of the season disastrously affecting all their interests.

With what has thus far been said this report might close, but it would be incomplete, for the current year has witnessed a genuine departure on the part of the society.

It is well known that for years a cherished wish on the part of members has been to have a fall exhibition of horticultural products, but the want of a suitable hall for a proper display has always been in the way of its consummation. As early as last May, however, our local florists were notified to be ready, by making the necessary preparations, as the society had resolved to attempt holding a floral exhibition sometime during the coming November.

In due time committees were formed and overtures made to the officers of the Woman's Christian Association for the use of the auditorium in their large building for the purpose of the exhibition. These overtures resulted in the recent "Chrysanthemum Festival," which was held under the joint auspices of the Horticultural Society and the Woman's Christian Association, the public-spirited and Christian ladies of the latter organization entering into the spirit of the enterprise with an energy and zeal which augured well for the final success of the undertaking.

Without attempting any details, it is enough to say that the initial floral exhibition of the joint organizations was a magnificent success, whether viewed from the standpoint of the innate beauty and regal gorgeousness of the flowers themselves, the liberal patronage it commanded, or the evidences of surprise and delight constantly visible upon the countenances of all who attended.

It is proper to observe here that the exhibition, successful as it was, could not and would not have succeeded had it not been for the generous liberality of the business men of the city, who freely donated the money with which to pay the numerous liberal premiums offered.

An inspection of the treasurer's report will reveal the agreeable fact that the society is not only entirely out of debt, but that it has a comfortable balance on the credit side of the ledger.

Mr. Woodard: What admission was charged?

Mr. Ohmer: Twenty-five cents; worth fifty cents. The cut flowers were all donated and they were sold and the proceeds went into the general fund.

Mr. L. B. Pierce: How much did you offer in premiums?

Mr. Ohmer: \$400, and there is about \$100 balance on premiums to carry over and add to one next fall.

President Cushman: The educational feature of that exhibition was one of the strong points.

Mrs. K. A. Arthur: I have a report from the Muskingum county horticultural society which I will read.

MUSKINGUM COUNTY HORTICULTURAL SOCIETY.

BY MRS. K. A. ARTHUR, SECRETARY.

Mr. President, and Members of the Ohio Horticultural Society:

Muskingum County Horticultural Society enters this, the seventh year of its existence, with very bright prospects for continued and increased success. We enrolled seventy members last year, and with a starter of thirty-four names for January, we confidently expect to enroll at least an even hundred before the year is out. Our membership is about evenly divided between ladies and gentlemen, and the ladies have quite as much to do in making the program at each meeting pleasant and interesting as the gentlemen. We hold our meetings, regularly, once a month, at the homes of members of the society, or of some person who takes interest enough in the society to offer to entertain us. Each year we aim to have at least two or three of the meetings held in entirely new neighborhoods, and in this way we arouse interest and secure new names on our membership list, often getting names for membership of persons who have never before attended one of our meetings. The attendance at our meetings averages about one hundred and twenty-five, and the interest and enthusiasm is constantly growing.

We have standing committees on orchards, small fruits, flowers, vegetables, vineyards, entomology and meteorology, and the chairman, or some member of each of these committees at each meeting makes a report, which is usually full and satisfactory. We have also committees on nomenclature, exhibits, refreshments and an assistant refreshment committee. At each of our meetings we have papers read or addresses made by, usually, one lady and one gentleman, after which a discussion of the subject follows, usually participated in by most of the members present, which always proves to be very interesting and profitable. During the past year we have also had most valuable and excellent assistance in making the program at each meeting varied and entertaining by several young ladies and one gentleman, who have given us excellent recitations, and some ladies and gentlemen who have, at different times, entertained us most agreeably with vocal and instrumental music.

Our display table is quite a feature at all of our meetings, and during the past year it has been literally crowded with fine flowers, fruits and vegetables. At almost every meeting some fruit has been submitted to the committee on nomenclature for identification; we are thus helping to keep the fruit of the county correctly named. The society has also, in the past year, given a name to two new varieties of apples, and one new variety of plums, which were raised in our county.

Our question box is also quite an interesting feature of our meetings, and much valuable information is disseminated through the answers to the questions. Full reports of our meetings are published regularly in at least two of our county papers, and we receive many evidences that they are read with much interest by not only our members, but by many who are not members and live too far away to attend our meetings. We have lost by death during the past year three esteemed and valued members, one of whom, J. S. Marcellus, having been identified with the society almost since its first organization.

Our society is in an altogether prosperous condition, and we believe we can make a meeting of the State Society both pleasant and interesting, and we therefore repeat the invitation sent to the Canton meeting, extending to you a most cordial invitation to meet with us at Zanesville in December of 1896, and hope that it may have your favorable consideration.

Mr. J. M. Petersime: I am the secretary of the Miami county hor-

tical society. I have no written report, but we have adopted some new features different from any reports I have heard here for the coming year and I will read a few of them from our program. At the May meeting there will be a display of flowers from hardy bulbs. June, strawberry and floral display, with premiums offered for several best displays. July meeting, display of cherries, small fruits and sweet peas, with premiums offered. August meeting, display of annual flowers. September meeting, display of grapes, tree fruits and dahlias. Display of potatoes, pumpkins and apples at the October meeting.

The President: I am sure that we can profit by that report and carry home something that will help us in conducting our local societies.

Mr. Aultfather: Our secretary has just handed me a report from the Stark county horticultural society which I will read.

REPORT FROM THE STARK COUNTY HORTICULTURAL SOCIETY FOR 1895.

The Stark County Horticultural Society held twelve successful meetings within the year, all but two of them at residences of different members in different parts of the county. We find the attendance and interest always better at residences of members than at public halls. Our picnic dinners are very effective in the promotion of sociability among the families of farmers throughout the county.

Considering the great slaughter of fruits by the late frosts last spring, our tables have usually held fine exhibits of fruits, vegetables and flowers.

Our meetings have usually been enlivened by recitations and songs by some of the young folks.

The papers read and discussions had, although not always containing great flights of oratory or high-sounding rhetoric, yet have usually contained good practical horticultural sense, and much practical benefit has been the result.

We enter on the work of 1896 with about ninety paying members enrolled who, with their wives, who are members by virtue of the dollar paid by the husband, and which they helped to earn, swell the membership to about one hundred and sixty, each entitled to all the rights and privileges under the rules to which any other member is entitled.

Mr. Mardis, Warren county: I have not a written report, but I can make a short verbal report. We have a very healthy society and good membership, and financially in good fix. We hold our meetings on the the social plan, on the second Thursday of each month except the August meeting, and in that month we hold it on the first Thursday on account of the "Pioneer" meeting on the second Thursday. The meetings are held in the town of Lebanon during the winter season, but in the summer they are held at the different homes of the members throughout the county. We scatter them as much as we can. We find it an advantage to scatter them in the different townships of the county as we take in more members. Our meetings run in attendance during the year from 100 to 500. The meetings are hardly ever much short of 300, and during the summer season they run up to 500. We have exhibits, that we

call a fall fair, an October fair. We have held that now for the past six years the second Thursday of October, and this last season there was a committee appointed to solicit the business men of Lebanon to help the society in giving premiums and it did good work.

REPORT OF LAKE COUNTY HORTICULTURAL SOCIETY.

BY H. B. DRAKE, SECRETARY.

This society was organized March 19, 1881, and its first president was the Hon. H. G. Tryon, formerly well known to many of the fruit growers of this and other states.

The constitution was adopted April 16, 1881, and the officers were president, vice president, secretary, treasurer and an executive committee to consist of one person from each township, eight in all; these last are now appointed by the president.

Formerly the meetings were all held in a hired hall in Painesville, but now in the different towns of the county.

The first year twenty-seven members joined the society; the third year fifty-one, the largest number enrolled; last year forty-two joined. The dues at first were twenty-five cents, but after a few years were changed to fifty cents, which has supplied most of the funds necessary for the society; some has been received from the proceeds of chrysanthemum and strawberry shows and donations. The principal expense of the society is the secretary's salary, which is now twenty-five dollars per year. There is now in the treasurer's hands over thirty-six dollars and no indebtedness. At first the program for the next meeting was announced at the one preceding it, but for several years a committee on program is appointed by the president at the beginning of the year, which is to report at the next to the last meeting in the year a program for the coming year, which is adopted at the last meeting of the year.

At most of the places where meetings are held the ladies prepare dinner, which gives them an interest in the society which they would not have otherwise, and the forenoon is spent usually in a social way. Fruit, flowers and vegetables are exhibited at the meetings to some extent.

Mr. Woodard (continuing): There is another feature, Mr. President, and that is that at our coming August meeting we propose to have what we call "Children's Day" and have the children do all the speaking. It seems to us that it will not be many years until some of the old people will begin to drop out and there should be others to take their places.

MESOPOTAMIA, O., *February 10, 1896.*

W. W. Farnsworth, Westerville, O.:

Dear Sir—We organized a Horticultural Society here in 1884 and it has been prosperous ever since. Last year it was changed into a Farmers' Club and continues very interesting. Its present secretary is Miss Flo Sweet and president is O. P. Laird.

REPORT FROM PORTAGE COUNTY SOCIETY.

BY FRANK FORD, RAVENNA.

Our County Society, I am glad to report, is in a very prosperous condition. It entered its eighteenth year to-day, February 19. The membership consists of about eighty paid members, with their wives and daughters, beside the neighbors of those who entertain the meetings are usually in attendance.

Very much of the prosperity of our society is due to our efficient secretary, Rev. Andrew Willson, who has been its secretary from its organization. He has a faculty of securing the dollars and keeping up the membership possessed by few.

The effects of the society are to be seen on every hand. More fruits, more flowers, more sociability, pleasanter homes, broader views of life, development of more kindly feelings among its members, a breaking down of the fences around religious denominations and partizan politicians. All coming together on a common level, not only to advance the cause of horticulture, but to make each others lives happier and of more value.

REPORT OF LORAIN HORTICULTURAL SOCIETY.

BY N. L. COTTON, NORTH AMHERST.

Lorain County Horticultural Society was organized August 17, 1894, with fourteen members and decided to hold four sessions each year—the strawberry meeting in June, the grape and peach meeting in September, a retrospective meeting in December and the meeting for annual election and planning for the year in January.

At our last meeting we were favored by the presence of Bro. E. H. Cushman, president State Horticultural Society, who urged the necessity of state organization backed up by local societies in order to secure more uniform excellence in producing and handling fruit and also the better to fight against our enemies in the garden and field and markets, and to this end there should be a close connection between our national, state and local societies, and local societies should be many times multiplied. A paper by I. E. Squires on "Food and Growth of Plants" was very interesting, and the discussion quite general. One brother praised Mr. Squires so highly he feared we might set our mark so high that inspection would be disappointing.

Bro. Cushman, on "Flowers for Pleasure and Profit," was received favorably, especially by the lady members.

Secretary Farnsworth: I might say that a year ago I had the pleasure of attending a meeting of this society and found quite a large number of enterprising fruit growers there.

REPORT OF N. W. O. HORTICULTURAL SOCIETY.

BY C. A. FYKE, SECRETARY.

The N. W. O. Horticultural Society is in a flourishing condition. It is composed of about forty families, who meet on an average of six times a year. We have three special meetings which call out a large attendance and much interest is manifested. The first is held in March and is known as our annual seed distribu-

tion, at which time new and standard varieties of seed for field and garden are distributed. In this we imitate the experiment station work by testing the most promising varieties of novelties and reporting the same at our annual fair meeting in September, which is the third and one of the most interesting of our special meetings. Our second special meeting is held in strawberry time and when the season is favorable we have a grand display of that most palatable of all fruits, the strawberry.

The other meetings are distributed throughout the year when the same will interfere least with farm labor.

Our meetings are held at the homes of the members, and this has a salutary influence upon each member, as it leaves his premises open to inspection and criticism.

The cause of horticulture has progressed quite satisfactorily since the organization of our society, but yet there is much to be done. At our last meeting, February 8, the following officers were elected: President, Fred Smith, West Unity; Vice President, Joseph Dickenson, Bryan; Secretary, C. A. Fyke, Pulaski; Treasurer, J. F. Hamet, Stryker; Chorister, Bart Thompson, Pulaski; Editor, P. L. Warren, West Unity.

Our programs take a wide range of topics, interspersed with music and recitations by the young people, together with a bountiful feast of good things provided by the ladies to satisfy the inner man. Altogether, we can report a good time intellectually and otherwise.

SUMMIT COUNTY SOCIETY.

TALLMADGE, SUMMIT CO., O., *February 14, 1896.*

Mr. Farnsworth:

Dear Sir—In accordance with your request of February 3, I will report the condition of our society as nearly as I can.

At our annual meeting, February 12, thirty-one paying members (one-dollar membership) were reported for 1895.

Hon. I. P. Sperry, Tallmadge, was chosen President; Albert Hale, Mogadore, Vice President; Mrs. C. N. Gaylord, of Munroe Falls, Secretary and Treasurer. The executive committee of three, viz: Prof. Claypole, Buchtel College, Akron; L. B. Pierce and Dennis Treat, of Tallmadge.

The society shows a fair degree of prosperity and its meetings are interesting and profitable. They are held monthly at the homes of the members, with an average attendance of seventy. Original essays are expected at each meeting from some member. The enclosed program will show our committees and general plan. The basket picnic entertainment proves successful and pleasant.

Mr. Pierce, the bearer of this, can add any desired information.

Yours truly,

FANNY W. CUTLER,
Ex-Secretary and Treasurer.

CUYAHOGA COUNTY SOCIETY.

BY MISS N. D. KEYES, SECRETARY, EUCLID, O.

Your request for a report from our society is at hand, and I respond very cheerfully, as I can report that this society is flourishing.

We number a good proportion of ladies, who take great interest in the society and its work, and they add greatly to the interest of the society. As a social factor our society has scored a great success, as a means of entertainment

to an industrious people, who have few amusements. This society by no means confines its papers and discussions to the subject of horticulture, but all the important topics of the day are brought before its sessions. In August one day is devoted to children and children's day is one of the pleasantest and most profitable of all the days of the year.

It is customary for the ladies to make a display of handiwork at December meeting, but as the chrysanthemum, fruit and vegetable show of last November was a great success, we propose in November next to hold a similar display, adding handiwork.

On February 12 we held an anniversary meeting at the Town hall, having completed the tenth year of organization. A bountiful dinner, at 1 o'clock, followed by afternoon and evening session. Excellent papers upon topics of interest to all, interspersed with good music, made the session one of great interest.

I would not fail to add that Mr. E. H. Cushman has been our honored president continually since the formation of the society, and with him still at the front we enter upon our second decade assured that success will still attend our efforts.

The Secretary: We are receiving an unusual number of requests to start a large number of new societies, and this is very gratifying.

President Cushman: It is very gratifying to me indeed and it must be to you all to hear so many society reports and invariably successful. At no time have we had so many reports read as on this occasion.

Mr. Bear: Not hearing any report from Greene county, I would say that we have a small society over there. It is a bee-keeper and horticultural society together. I think it is about three years since it was a bee-keeper's society only. There was a horticultural society before that, and they combined the two. It has been a success as far as we have gone. Our summer meetings have been very good. The winter meetings have been held in the town of Xenia. We had no proper place for holding the meeting and it has cut off the lady members from the society from the fact that we held the meeting in an insurance office. But we have made different arrangements now and are going to start out new this coming year. I think the connection of the bee-keeping with it is a very good plan. We have an essayist on bee-keeping and a report read on horticulture, on orchards and all kinds of fruits, and generally have a pretty fair representation. The society has done a great deal of good although we have never made any report to the state society.

STARK COUNTY SOCIETY.

By request of Mr. H. H. Aultfather and by direction of our society I herewith send you a report of the condition of the Stark County Horticultural Society for the year 1895, and the beginning for 1896.

We held twelve meetings within the year, nearly all at residences of members, and all were well attended. The July meeting, at the residence of H. A. Holibaugh, being the largest, with an attendance of about two hundred.

The interest has been kept up during the year and we begin another year with

about one hundred paying members, one dollar paying for man and wife, so that our membership is between one hundred and fifty and two hundred.

The officers elected for 1896 are: President, Joseph T. Hayhurst, Canton; Vice President, Mrs. S. L. Correll, Canton; Secretary, Samuel H. Rockhill, Canton; Treasurer, Peter I. Palmer, McDonaldsville.

Secretary Farnsworth: Our society when first organized began, as some of the members know, as a "Neighborhood hunt" long before the war. After the war it was changed into a Farmers' Club, and in 1876 it was changed into the county horticultural society and has been running ever since, and we consider it one of the most useful, beneficial and pleasant institutions we have. It has a large membership and we hold eleven meetings annually. Our society is growing. In our society we have a little different arrangement from most societies. As you know the ladies have their separate organization and topics. All work together at the same place. They have a separate set of officers and topics. Our society has been a means of benefit in a horticultural sense and in a social way, and we have had some effect upon economic problems in the county, and an effect upon the promotion of good roads and better husbandry and pleasanter homes.

Mr. Miller: I have no written report. Our fruits have not grown much since our last meeting in December. I might report that our orchardists have been busy this winter preparing for the bountiful crop they expect the coming year. The orchard area in that vicinity will be largely increased in the spring, perhaps greater than at any other one year. The lands that are adapted to the growing of peaches that are in the market are quickly taken up at good prices and we think that within a few years our crops will be doubled.

At the last meeting of our Farmers' Institute Professor Selby of the Experiment Station rather scored the people for growing over one-half of the peaches in the State of Ohio and not having a horticultural society. Some of our people acted at once, a committee was appointed and they reported a plan of organization and on the first day of this month we organized a promising society. President Cushman was present and gave us valuable aid in that organization and we promise at our next meeting to report 100 members. Since that time our people have taken hold of it with so much zeal that a township organization has been formed in one of our townships. Your committeeman had the pleasure of visiting a vigorous society in Erie county a few weeks ago. They are doing good work there.

(Owing to the imperative necessity of greatly curtailing the size of our report I thought best to merely give a synopsis of reports on fruit prospects. Sec'y).

The buds were very generally reported in good condition, but the drouth made itself felt in a very poor stand of strawberry plants, and in some cases in lessened growth and vigor of trees.

On the whole, however, the outlook is good, especially when proper pruning, spraying, tillage and fertilization have been given.

President Cushman: This closes the report of the ad interim committee, for the present, at any rate. I would like to announce two committees before we adjourn, one on membership and one on order of business. For the committee on membership, I will name Hon. N. H. Albaugh, F. G. Withoft and Theodore F. Longenecker. And on program and order of business, E. M. Woodard, W. J. Green and Mr. N. Ohmer.

And thereupon the convention took a recess until 1:30 P. M.

AFTERNOON SESSION.

Order was called by the president at two o'clock P. M., pursuant to adjournment. The first order of business was announced by President Cushman to be the question box.

C. W. Allen: I would like to ask the plum growers what varieties of blue plums, barring the Bradshaw, they would plant. I have the Bradshaw, but with me it rots very badly even after well sprayed.

Secretary Farnsworth: I would say the Guili, also the Moores Arctic is good, having a small pit.

Question: Can anyone present recommend a wash that will prevent borers from working on peach and apple trees?

Mr. Albaugh: The best wash for apple trees is soft soap or strong soapsuds. It takes off all the moss and clears off the bark. It is almost sure to keep out the borers. The best wash to keep the borers out of the peach tree is to get down and dig them out.

Professor Green: A little carbolic acid put into the soap is a help, but there is no wash that is a sure preventive.

Question (by Mr. C. W. Allen): Who manufactures the best horse hoe? I have used the Johnson Diamond Disc (reversible) the past year and am well pleased with it, all but the price.

Secretary Farnsworth: The Morgan horse hoe is good.

Mr. Pierce: There is a cheap horse hoe manufactured by Cahoon Brothers at Dover, Ohio, which costs \$6.50. It has no wheel to it.

Question: Will an orchard of Bartlett pears bear well without other varieties planted near them?

Mr. Albaugh: I do not want to answer all these questions. I have not had the experience myself, but a young gentleman by the name of Davis of the firm of Davis & Co., planted a pear orchard of 15,000 Bartlets in Virginia not very far from Baltimore, and he said they did not succeed in getting satisfactory returns except around the edges of the orchard

next to other trees and they crossed them with other varieties and had much better success. William Parry of New Jersey wrote me upon the Kieffer and said he would advise planting other varieties even in a little orchard of the Kieffer. If you have a very large orchard of Bartlets you better plant something else with it, just as I would with the Ben Davis.

Mr. Ohmer: I planted in early days 600 Bartlet pear trees in one orchard and it was probably a quarter of a mile to other varieties. Those Bartlet trees never failed to bear a good crop, but of course there is a good deal of difference between 600 and 15,000. But large plantings of single varieties all over this country and Europe in the last ten or twelve years seem to show that Professor Bailey's theory is correct that no one variety has all the elements of successful self-fertilization.

Question: What two varieties of winter apples are the most profitable to plant in the latitude of southern Ohio?

Mr. Freeman: I believe the Minkler stands with anything we have in this locality.

A Member: Is it a pretty good grower?

Mr. Freeman: It is the most rapid grower of anything planted. They ought to be planted 35 feet apart to succeed well. They will grow to the extent of thirty feet each way.

Mr. Longenecker: In regard to southern Ohio, the Rome Beauty is recommended and that is followed with the Grimes Golden an old variety that we have been overlooking. The Ben Davis is not found so profitable there. While it yields well the Rome Beauty is now doing much better than the Ben Davis.

Question: What occasioned the Codling moth to come in hordes in July and August and up to gathering time in September whilst there were the fewer in May and June than for many years? I sprayed my apple trees from three to four times in April, May and June; no sign of moth then. Early apples ripened nearly exempt, but late winter apples fared the worst, the worms taking from three-fourths to seven-eighths of them, causing them to drop and decay during the hot weather, latter part of August and September.

President Cushman: I will call upon Professor Green to answer that question.

Professor Green: I cannot answer the question satisfactorily I know that it is very abundant during the early part of the season.

Question (J. H. Tryon): I have a pear orchard that has never blighted until last season and I think it was caused by the severe May frost or freeze. When the freeze came the fruit was set and growing and the trees never looked better. The mercury dropped to 26 degrees on the night of the 16th of May which froze the fruit solid so I did not get any pears. After a few weeks the trees commenced to blight at the ends of the limbs and it continued to work down until many of the trees

seemed to be nearly ruined. Was it the freeze that caused the blight and what is the best thing to do to make them of value hereafter? My plan is to let them commence to show signs of life where there is any in the spring and cut back to that point. Is that the thing to do and is that the proper time to do it? Will they be likely to make healthy trees if the work is properly done and the season should be favorable for a healthy growth?

J. H. Brittain: Mr. A. T. McKelvey at the county institute said that the cause of the pear blight was a fungus and that there was no known remedy for it. Now, the question is as to the cause of the pear blight.

Professor Green: It is not exactly a fungus. It is a lower form of life. It is called bacteria, but we are certainly unable to control it. I should say in answer to the first question that the freeze did not probably cause the blight, but it may have had an influence in weakening the trees so that they could not resist it so well.

Mr. Whitney: Probably no one would agree with me as to the cause. I have a pear orchard planted from three to six years that was loaded with pears and they were frozen by the frosts in May and the trees began to blight in June. Of course I could give my method of treatment of blight. The blight will appear different in many seasons and instead of coming on one branch or one portion of the tree and that dying and all the other parts remaining healthy, when the blight appeared it struck all over the tree and the leaves began to turn black and afterwards the branches and then not long after, in a few weeks, many of the trees started out in a new growth on the large branches and below where the blight struck them the worst. I looked the orchard over and marked those trees. There were about 600 trees perhaps in the blighted part. I had an orchard of Kieffers and some Duchess that did not blight, and when I got through with the orchard I had 100 marked for digging out entirely, but I shall go through and cut back all the dead parts and probably use some soft wax over the branches where they are cut off and in that way I expect to have a new growth spring up and make a top. Some seasons they will continue to grow on and overcome it. My opinion of the cause of the blight is winter killing and nothing else. I have been among pear trees for twenty-five or thirty years and have seen a great deal of blight, and my father before me, and he formed the same opinion, that the trees were winter killed, and if the bacteria were there it is because they were permitted to be there on account of the weakened condition of the trees. As a rule it is the most thrifty growing trees that blight first.

Mr. Ohmer: I want to ask you a question: Why it is that as a rule it is the most thrifty growing trees that blight first?

Mr. Whitney: Because they winter kill the easiest.

Mr. Miller: I think that pear growers ought to be cautioned against delaying to cut off those blighted branches until the wood growth be-

gins in the sqring. If it is done while the buds are dormant a better new-growth will be forced out and it will be less liable to kill the tree entirely. I have in a great many instances cut off the tree in the winter within a foot of the ground and got a much better tree than I could have by planting a new tree.

Mr. Albaugh: I have been wondering if winter killing is the cause of blight why they have blight in the Kieffer orchards down south where there isnt any freezing. I think that the blight question will put us in about the same fix that the theological question of total depravity and original sin puts the preachers. They have been at it a great many hundred years and we can be at this blight question a great many hundred years.

Mr. Whitney: In answer to Brother Albaugh's question I would say they have frost down south as well as in the north. Oranges frost down there. A degree of cold that our trees will stand may injure them down there. I know the cause of the blight, but I do not know what will cure it.

Mr. Ohmer: And you don't know the cause of it (laughter).

Secretary Farnsworth: We have generally supposed that the bark blight on the trunk of the tree was different from the regular fire blight, but I have found it very difficult to distinguish where one left off and the other began. It seemed to me that it started in the bark on the trunk and ran up to the top, and we would begin cutting in the top and could hardly see a division line.

Mr. Miller: I would like to ventilate this a little bit further. I would like to ask the secretary if he has ever succeeded in cutting off the blighted branches in the summer.

The Secretary: I never had any blight to speak of until the past year, and we did cut immediately in the summer and went over it several times during the summer and it seemed to check it, but my experience is not extensive enough, and hope it never may be, to be very good authority.

Mr. Longenecker: I attempted to cut back a few years ago about one-half of the pear trees out of 150. I began cutting in the summer as soon as the blight showed and kept it up, but I could not see that there was any difference in regard to the blight.

Secretary Farnsworth: I might say that I have about 2,500 trees that have been planted from two to eighteen years and I have not lost twelve trees all told. Possibly my losses are just commencing.

Mr. Longenecker: I have not lost any trees for twelve years until last year.

Mr. Withoft: I received a letter from Mr. Moody of New York the other day in which he said we should commence washing our pear trees. He does not wait for the blight to attack his orchards, and you know that Moody & Sons are the largest pear growers in New York. He uses

a wash every spring and washes by spraying the limbs. He uses white-wash, sulphur and carbolic acid. This will prevent both the frozen sap blight and the other blight. He recommended to me that I should commence washing in March or April.

Question (C. M. Gatton): What five varieties of plums would you plant for commercial purposes?

Mr. Stoner: I have an orchard of 120 trees that were five years old the first year they bore and they averaged a bushel to the tree. They were largely the Richland, though there were a few of some kind of a greenish plum that were designated as Spaffling. The Richland was one of the most profuse bearers among plums but I could hardly recommend it as a highly profitable plum. I have found the most profitable plum, taking into consideration hardiness and readiness of sale in the wholesale markets, is the Moores Arctic, and in talking with a man who is engaged in planting plums very extensively he gave me this rule to go by in plum culture: He says the nearer you stay around a little blue plum the better you can sell your plums. I find that the little blue plum sells in the Dayton markets. The Moore's Arctic has all the characteristics of the Damson. The next thing that the people want is a green plum. This green plum that I had, there were about a dozen trees and they all bore about twelve bushels. I wholesaled them to one man in Dayton for three dollars a bushel. I bought them in the nursery but they were not named, but the gentleman said they were the Spalding. The market wants a blue plum and a green plum and they will pay more for those two colors than for the purple plum.

Mr. Withoft: I found in New York and Philadelphia that the red plum took very well. We were shipping Burbank for from \$3.00 to \$5.00 per crate and that was the experience of all the southern growers in the plum markets, that the red plum sold the best.

Mr. Longenecker: The Moore's Arctic I fear is liable to blight, and the Richland, which my friend Stoner spoke of, yielded me twice as much to the tree as the Moore's Arctic or Lombard although I did not get as much per bushel as for the others. I have not many pear trees or plum trees, but from the testimony that I get hold of it seems that the Richland is the most profitable plum we have here now. It bears some resemblance to the little blue Damson.

Mr. Withoft: Understand me, I do not want to say anything against the blue plum. When you get within one hundred miles from Kentucky everybody wants a blue plum.

A Member: I think it is the quality of the Moore's Arctic that sells it, but I am satisfied nevertheless that I can make as much money out of the Damson. It has the black knot but I do not fear it any more.

Mr. Moore: Is the Moore's Arctic freer from the black knot than the Damson?

A Member: Not much more so.

Mr. Ohmer: You do not fear the black knot but don't forget to tell us how you will prevent it.

A Member: I took the trees I had from an orchard of sprouts that grew in an orchard that had been cut away on account of the black knot, and consequently I had the germ of the black knot in the trees I took with me, but for five years they have been bringing me from two to nine dollars per tree, and by the way, I treat our trees before they come into bloom or bud, I saturate all of the tree with the Bordeaux Mixture, and it was white and stayed white almost all of the year. Nevertheless, there was occasionally a black knot appeared but I watched them very closely during April and May, and I found they gave me no trouble only during those two months. And if you will watch them closely during April and May when they appear there is no trouble. I would say that they would come in competition with the fine blue plums from the east and elsewhere, and I could sell the Damson better than other varieties.

Mr. Rhodes: What can you say of the Shipper's Pride?

A Member: The Shipper's Pride and the German Prune are among the best paying kinds.

Question: Is the Shipper's Pride inclined to rot?

Answer: No, sir.

Question: How is the Gueii?

Answer: It is good.

The Secretary: I have considerable interest in plums and tested quite a good many varieties. I find the Lombard, the Geuii, the Reine Claude and the Niagara are the best. The Niagara is not perhaps quite as productive, but my experience has been that if there is any difference between it and the Bradshaw I cannot detect it, except we have thought it was much more productive. The Reine Claude is a sure bearer and a good keeper and brought this year the best price. The Lombard is a good plum but it comes at a bad time. I am also planting French Damson upon Mr. Willard's recommendation, but I think a great deal of the Geuii. I am afraid of the Japanese plums on account of the early blooming and the American varieties, we do not value highly where we can grow the European, but where you are not subject to the late frosts in the spring there is no doubt but that the Japanese will be very valuable.

Mr. Withoft: Speaking of the Japanese varieties, the President of one of the largest canning factories in New York was here last week and in speaking of the different varieties of plums for market and canning, he said at their board meeting last fall they tested forty varieties, at Geneva, New York, and he said that four out of five said that the Burbank was the best canning plum they had of any European or American variety.

Question: Did they say it was profitable for market for the grower?

Mr. Withoft: I was getting onto the subject of planting the Bur-

bank or the Abundance for the market. I said, Don't forget the Burbank is one of the varieties most represented in our market and he made this statement. The Abundance is too soft and not a good canner.

Mr. Ohmer: Will the Bordeaux Mixture prevent rot upon plums?

The Secretary: Not altogether.

Mr. Ohmer: What will do it?

The Secretary: There are several things that will help it: Picking and burning the old rotten ones, and the use of the Bordeaux Mixture.

Question: In planting a permanent orchard of twenty acres in Central Ohio, by a young man who has all kinds of small and tree fruits but wants to plant twenty acres of one kind of fruit, what would be most profitable, apples, peaches, plums or pears, on high land?

Mr. Ohmer: He must not put all his eggs in one basket.

President Cushman: I would like to know if you all agree to that. Mr. Ohmer says he must not put all his eggs in one basket. He has only spoken about twenty acres. He has other small fruits and according to the doctrine of our horticulturists he is not to have too many varieties. Why would it not be good policy for that man to select either apples, peaches or pears and put it in one variety of fruit? I do not believe that I could hold to the doctrine that Mr. Ohmer has just spoken of, with the understanding that the young man has small fruits. Of course if he had nothing else but this twenty acres it would not be the best thing for him to do.

Mr. S. R. Moore: It seems to me, Mr. President, that the adaptability of his soil would have something to do with it as to what he should plant; also his market facilities should have something to do with it. These things would have to be considered. What might suit the Dayton market might not suit some other market. The gentleman here just stated what works best in the Dayton market, but he does not know outside of that what would suit the Columbus, Cincinnati or Cleveland markets or any other market, and that might be so in this case. A man should study what his market facilities are and also what his ground is adapted to. If it is the better for plums, then let him plant plums, etc.

The Secretary: We judge from the question, Mr. President, that he did have a general assortment of small fruits and that he was supplying his customers, and if he was doing that and his soil was adapted to other varieties of fruits it would certainly be to his advantage to grow all those different varieties to supply his trade, but if his soil was peculiarly adapted to any one class of these fruits, apples far better than anything else, or plums better than anything else, he would be justified in planting one kind, especially if he shipped in bulk, but where we have a home market to supply we ought to supply it within a reasonable limit.

Mr. Withoft: There might be an advantage in having it in two or three kinds of fruit. If he had it all in apples or pears and two or three

kinds of fruit, in off years for one variety the other varieties might produce something.

President Cushman: I understood the question to mean, if he was going to plant one kind of apples, peaches, pears or plums, which one to plant.

The Secretary: Taking that view of it I doubt if anybody could give an answer to it without knowing the nature of his soil and its adaptability.

Question: What is the best sugar-corn for family use?

Mr. Ewing: There are so many varieties. Black Mexican is said to be about the best. It stands as high as any in quality.

Mr. Longenecker: I should say where a person could get the genuine Old Colony that it is among the best where the soil is rich enough for it.

Mr. Moore: Is there anything better than the Stowell's Evergreen?

A Member: Yes, sir.

Mr. J. M. Petersime: I find in my experience that the Stowell's Evergreen is giving better satisfaction than anything else I raise. One year ago I had sixteen acres of sweet-corn out and I found that Stowell's Evergreen for market, or evaporating or home use covered more of the season and brought in more money than any other variety I have ever grown. Two years ago I worked on an acre of Stowell's Evergreen for five solid weeks from the time we began using until I finished the acre, and I have not found anything that paid me any better.

Question: What are the best six hardy roses?

Mr. Warder, Cincinnati: There are so many it is pretty hard to select six. I would say Washington, Countess Serruga, Coquette des Alps, Gabrielle Luixet, Jacqueminot and Paul Neyron, for those who like a very large rose.

President Cushman: Isn't the Hermosa a good one?

Mr. Warder: Yes, but it is no better than the Jacqueminot.

Mr. B. F. Seidner: I would suggest as the first one the Jacqueminot, Marshall P. Wilder, Mrs. Charles Wood, the old Jules Margotten, La Reine and Coquette des Alps.

Mr. Warder: The La Reine will mildew three days out of the week, will always do it; blooms only in showry weather and only on clay soil.

Mr. Ohmer: Mr. Warder lives near the Ohio River.

Question: Can the Hermosa be grown successfully out of doors?

Mr. Warder: Yes, sir.

Mr. Longenecker: If I were to confine myself to one rose for out of doors, I should take the Paul Neyron. Early in the season shoots come and we are getting them when we are not getting them from any others.

Question: How can we keep sweet peas from going to seed?

Mr. Ohmer: Eat them before they go to seed (laughter).

President Cushman: I had a little experience with sweet peas about three years ago that might be of interest to mention here. They grew up and furnished the bloom that we naturally expected, and after they were practically through blooming we had a heavy rainstorm and the vines fell over onto the ground. The brush that they were held up by tipped over and immediately all along the old stock came a fresh growth, and we had sweet pea blooms from that fresh growth until frost. I have thought several times since then I would try that artificially, that is, after they had bloomed their first life out I would bend them over and try and start a new growth by watering them. I never have done that, but I believe there is a suggestion in it that can be successful.

President Cushman: We will now listen to a paper by Mr. W. S. Kelch, of Dayton, upon "Commercial Fertilizers in their Relation to Horticulture."

Mr. Kelch: I have written this paper from the manufacturers' standpoint, but have tried not to make it an advertisement.

SOME REMARKS ON THE FERTILIZER BUSINESS FROM THE STAND- POINT OF THE FERTILIZER MANUFACTURER.

BY W. S. KELCH, DAYTON.

From out of the ground comes the riches of the world. The agriculturist, the miner, the manufacturer are all dependent on mother earth for their prosperity, and on the agriculturist is fixed the greater responsibility, as his is primary. It is his mission to provide food for the worker in the mines, in the factories and offices, as well as to furnish a part of the material used in industrial process. In proportion as the farmer prospers, so does the worker in other lines. The closer the interchange of products between the farmer, the miner and the manufacturer, the more secure is the country's prosperity.

From the days when the primitive Egyptian first cultivated the soil to the time of Liebig, agriculture was an art, and success depended in a great measure upon individual skill and knowledge of the practical observation and work of previous generations. To-day, in addition to this hard-earned knowledge of earth's secrets, is the privilege of he who cares, to bring to his aid that powerful helper—chemistry. Agriculture to-day is not only an art, but a science; the science of applied chemistry.

The Egyptian farmer had for centuries carried Marog, or nitrous earth from the hills to the valley, because his observation taught him that its application brought increased corn to his crib. Why, he knew not.

The tea grower of China and Japan had for ages saved and applied to his hillside garden every bit of human and other excrement he could obtain—he took dried grasses, twigs and shrubbery and plowed them under—he knew this aided in keeping his land in condition and benefitted his crops. Why, he could not say.

The Greek had noticed that where cattle droppings had fallen on his pasture lands the grass had thickened and grown heavier. He remembered this and made use of it in his agriculture. Why it was, he could not tell.

The observing Continental and English farmer has known for many generations the good results obtained by the application of bone dust to his fields—he realized that there was some hidden power in decaying animal matter which in-

creased the growth of tree and vine. He carefully saved every bit of manure produced on his farms, and later put it where it would do the most good. He adopted a clever rotation system of tap-root with spreading root crops—he did all this because generations of experience had told him that it was a good thing to do. Why it was so, he did not know.

They were all, unknowingly, following the now known laws of agriculture. In nearly all callings the practical man comes first—then the scientific man. The chemist tells why such things are—he weeds out the follies tangled up with the truths in the creed of the practical man, and each can be of great assistance to the other.

In this Ohio-Mississippi valley country nature has been very kind to us. We have the richest of lands with the best of transportation. This will bring with it great population, and we are undoubtedly destined to become residents of the most densely populated part of our country. We are passing the time when we can all profitably raise undiversified crops, such as wheat and corn—in a few years our lands will be far more heavily taxed for crops than they are now—we will have more people to feed in our own locality. There will be less necessity for long transportation of produce. We must more thoroughly work our farms—we must raise more per acre, and of higher priced produce. How are we to do it? By high farming and the intelligent use of commercial fertilizers.

When Liebig and his co-workers explained away the mystery of plant growth, and demonstrated in a practical way that soil fertility could be restored by the application of chemicals containing nitrogen, phosphoric acid and potash, a demand immediately sprang up in the older countries for these chemicals for use in agriculture, thus making necessary the manufacture of fertilizers, and every product containing these ingredients immediately became more valuable. Dried blood, bones and tankage from slaughter houses, sulphate of ammonia from gas and coke plants, nitrate of soda from Chili and Peru, bones from India, South America and our western plains, hardwood ashes, saltpetre, linseed cake, cotton seed meal, bone black, potash and other materials in their various forms all had additional value because of their use in agriculture.

The farmers of these older countries and states were in competition with products raised in the West on new and phenomenally rich soil, and they welcomed a change in their agriculture which enabled them by increased yield per acre to reduce the cost of raising their various crops, and thus in a great measure offset the competition from new lands, as they fully appreciated the fact that it takes as much seed, as much work and as favorable a season to raise twenty bushels of grain per acre, as forty. So, as the demand for fertilizers existed, the manufacturer was there to supply it, and as the demand grew by the spreading of knowledge of the value of fertilizers, the manufacturer grew in size and importance.

The agricultural implement manufacturer has made our agricultural results surer. We are less dependent on the whims of the weather. We can put in our crops in less time, and can harvest them quicker than in the old, primitive way. The manufacturer of commercial fertilizers now comes in and provides another safeguard for the agriculturist. Does he make the most of it? Does he appreciate the possibilities of the new agriculture—that he is in a measure released from the old system of rotation, and can be dictated in putting in his crops, by what pays him best?

The manufacturer of fertilizers enters the business for one of two reasons: First, he either accumulates ammonia, phosphoric acid or potash as by-products in some industrial process, such as the slaughterer, the oil presser, the glue maker—and of necessity is in the business, or—second, he enters into the business as a direct business in itself, buying his crude materials on the open market. The aim of each

class of manufacturers is identical—each aims to manufacture his product at the least possible expense, and to get it to the actual consumer in as direct a way as possible. His labors in this direction have been beset by many difficulties. In the first place, the demand has had to be built up, and against the prejudices of the user. Enterprising farmers here and there in the older countries where the soil was impoverished, had to be induced to buy the goods—the results which they secured had to be brought to the attention of their less enterprising neighbors, and they induced to try them—thus the demand grew. The discovery of rock phosphate deposits in South Carolina caused the market to be flooded with this article before the demand for commercial fertilizers had been built up on a solid foundation. This article acidulated, and containing neither nitrogen or potash, did not possess the complete qualities necessary for a commercial fertilizer, and its large sale rather injured the business as its effect after the first year or two was lost, and the user decided that fertilizers were temporary make-shifts, and did more harm than good. His reasoning was faulty because he had not experimented with the right goods. He had tried “phosphate,” however, and he dismissed the whole subject as a “fake,” and it was hard to get him to try again.

Then comes the man who purchases complete fertilizers, to raise potatoes, for example. He is told to use 600 pounds to the acre, and he dumps it in the hills all in one spot, and then complains that the fertilizer kills his potato seed. The misuse of fertilizer causes many failures. This bad result is charged up to fertilizers, and has to be overcome.

Another man, and we are all acquainted with him, buys his fertilizer, puts it in with his crop and expects the fertilizer to do the work, while he sits on the fence and whittles or talks politics. He gets a fine crop of weeds, and charges their abundance up to the “fertilizer”—and in this he is right, as weeds like nothing better than rich soil and a poor cultivator. This man has much time to talk, and his condemnation of the fertilizer which he has bought on time, and perhaps never pays for, has some influence on his neighbors.

Then comes the dry season, when the heavens are continually bright, when the earth dries up and the crops sizzle and yellow in the field. We know of no process of reasoning by which this state of affairs can be directly traced to the use of commercial fertilizers, but the claim is made nevertheless.

Another point which works against the use of commercial fertilizers is the fact that unscrupulous people have sold to the farmers at high prices, stuff called commercial fertilizer, but which was entirely without agricultural value, and as it naturally produced no results, this is held up as an argument against commercial fertilizers. The various state laws now make this sort of merchandising rather difficult to repeat, but nevertheless it has its effect.

All of these objections have to be overcome before the fertilizer manufacturer can really get down to business and begin the campaign of education necessary to build up his business on the only sound foundation for success, giving goods which produce results, and at a fair price. It is the duty of the fertilizer manufacturer to provide accurate information as to the use of fertilizers to his agents and customers, to carry on his campaign of education in this particular agricultural specialty on the broad lines of next year as well as this. He has a duty to perform. Does he perform it? Does he employ thoroughly trained salesmen to sell his goods—men who are posted on the A B C of their business—who are able to give intelligent advice, or does he send out as his representatives, men whose chief strength lies in trade cunning and misrepresentation?

The path of the manufacturer of commercial fertilizers is not an easy one. His business has been singled from the many where the farmer is a purchaser, and he is subject to all kinds of regulations, etc., no two states agreeing on their require-

ments. In some states he is required to license his various brands at so much an ingredient—in other states so much per brand, no further tax being required. In other states he licenses his brands, and in addition to this has to buy tags at so much per hundred, one tag being attached to each bag. In other states he pays a tax of so much per ton. In some states no tax is required, but brands have to be registered and kept up to guarantee. In some states the nitrogen has to be expressed on the bags in the form of nitrogen—in others, of ammonia. In some states the sliding scale—that is, ammonia three to four per cent. is not allowed printed on bags—it must be one or the other. Some states require the phosphoric acid to be given in its three forms water soluble, reverted and insoluble, others available only—no insoluble. Letters used in printing must be of a certain size in one state and another size in another, and so it goes—no uniformity, a different bag for about every state.

Last but not least is the absurd commercial values, differing in each state on the same brands—illogical, misleading and utterly pernicious. Many of them are based on the wholesale value of crude ingredients at some point many miles away, underground, unmixed, not bagged, no provision being made for expense in assembling, manufacturing, bagging, selling, etc., etc. These are all part of the true commercial value of a fertilizer or other product. In some states the attempt is made to restrict the selling price of the manufacturer and his agent to twenty-five per cent. above the cost of crude materials at some other point—this to include cost of making with its charges for fuel, power, labor, carrying, etc., cost of selling, advertising, bad debts, etc. No fertilizer firm on earth can do business on such a close figure. Such values and requirements are entirely outside the intention of the fertilizer laws of the states and are uncalled for. They confuse the farmer, give him no correct information, make no distinction between choice ingredients and poor ones, and are misleading. They may also work an injustice to the manufacturer and restrict the growth of a legitimate business, calculated to help in the agriculture of a state. These absurd commercial values certainly work in favor of the large manufacturer as against the smaller—the natural manufacturer as against the one who has to buy his material on the market, and are bound in time, to restrict competition, thus reacting on the user. The keen competition of to-day prevents the fertilizer manufacturer from getting an excessive price for his goods—without the state attempting to dictate as to what price the goods shall be sold for.

The manufacturer of fertilizer has but little to say to the horticulturist. He appreciates fully that the horticulturist is the highest development of the husbandman; that he is in love with his work and is always a student in his work. He keeps up with the increase in knowledge in his calling, and by various organizations is reaping the especial advantages of cumulative experience. We might suggest, however, that in his studies as to the habit of the plant, he pay more attention to the soil in which the plant best thrives, and the food it seems to relish the most. He can be of great assistance to the manufacturer of fertilizer and to his chosen calling if he will but carry on systematic field tests as to the action of the various fertilizer ingredients, both singly and combined on the different plants he is interested in. He will thus possess himself of useful knowledge, and add his investigations to the text book of that wonderful and elevating occupation—horticulture. The fertilizer manufacturer needs the co-operation of the horticulturists—their interests are identical, their objects the same—the perfection of agriculture.

Mr. Stoner: I would like to have something brought out in reference to the actual use of commercial fertilizers among small fruits. Sufficient manure is not available for many of the small fruit-growers, particularly those of us who are eight or ten miles away from the city. That

makes the hauling cost us too much. We are able to compost various materials to obtain some humus and that idea is supplemented in the use of commercial fertilizer on strawberries and other small fruits. Last year I used five tons to ten acres, consisting of half high grade ammoniated bone. I sowed this immediately after planting and cultivated it in. It would probably have been much better if I could have drilled it in previous to planting. I cannot tell as yet what benefits I may get from it. The season was so dry that a large portion of that fertilizer did not dissolve. The cost was about \$15.00 per acre. That would require an increase of only about ten bushels of strawberries to reimburse me. We could well afford to put it on if we got fifteen bushels or more extra. That would be a very slight increase.

Professor Green: What do you mean by ammoniated bone? Can you give the analysis?

Mr. Stoner: It is a brand of goods that these people sell at about \$28.00 a ton.

Professor Green: Who manufactures it?

Mr. Stoner: The Dayton people, Jas. McCallum & Co., that is the brand I use.

Professor Green: Did you leave any strips where you did not use any bone?

Mr. Stoner: Yes, sir.

Secretary Farnsworth: It is very easy to plant a few rows of potatoes with fertilizer and a few rods without, but when you go into the strawberries with it, one strip with and another without, and then go in there with thirty or forty pickers you could not tell very much about it by the eye. A difference of 25 per cent. in the yield would give an immense profit while it would be indistinguishable to the eye. And I suggest to Professor Green that this would be one of the best experiments the Station could pursue and yet the most difficult. I have used commercial fertilizers. We can obtain a reasonable amount of stable manure but not as much as we would like to use. Another disadvantage is that we get so much weed seed in the manure. My idea would be to get the soil in good mechanical condition and then after the first few years give it a liberal application of commercial fertilizer to force out the fruit.

Mr. Stoner: I can well afford to use a thousand pounds of fertilizer per acre, but the last two seasons I have run against this obstacle. It has been so exceedingly dry that the fertilizer did not properly dissolve. I may get good results later. I used the pure bone. That is the reason I did not get my money back.

Mr. Longenecker: I have experimented some with commercial fertilizer. I would like to find it profitable; I know all fruit-growers would. I am not through experimenting with them yet, but so far the experiments have been unfavorable. The results have not been satisfactory.

I would like to hear from Professor Green. Certainly he has had much observation upon this line.

Professor Green: I have experimented on strawberries particularly and my results were not altogether satisfactory. We had poor ground to begin with and I do not think that was just the right thing to do. The barnyard manure made the plants grow more the first season and the nitrate of soda increased the growth but not the crop to any very great extent. The course I would pursue now would be to use bone meal and wood ashes, or, if I could not get wood ashes I would substitute sulphate of potash or a good grade of super-phosphate, containing some potash and some phosphoric acid, and then use nitrate of soda for the top dressing in the spring before fruiting. I know that will have an effect on the growth and some claim that it has a decided effect upon the quantity of fruit, but my experience is that it does not affect the quantity of fruit materially.

Mr. L. B. Picre: My experience has wholly been confined to super-phosphate of the Cleveland and Detroit make, and I can find no good results or increased results in productiveness or yield from the use of this on berries direct, neither can I on corn or potatoes. I have never been able to get my money back in using them. The only way I can see any good is in clover or grass. I can get a heavy growth of that by the use of fertilizer, and if anybody can get a heavy growth of clover and plow it under he has the most natural soil for strawberries. It takes two or three years to do it, but it is a much more satisfactory way of using barnyard or stable manure than to apply it direct.

Secretary Farnsworth: My ideal preparation for the strawberry is to manure the clover sod, put it into potatoes and the next year into strawberries. The clover sod gives a good mechanical condition.

A Member: I would like to ask Professor Green how much he would he use of the wood ashes and nitrate of soda?

Professor Green: I did not name the quantities that I would use. It is almost impossible to say just what the proper quantities would be. Use two or three hundred pounds of bone meal per acre and forty to fifty bushels of wood ashes per acre, and in the following spring nitrate of soda, two or three hundred pounds per acre.

Mr. Stoner: I would state one fact that came under my observation. In digging the plants out of blocks on which fertilizers had been used freely, at the rate of 1,000 pounds per acre, we noticed that they were much better rooted than where fertilizer was not used; hence, that would show a more vigorous plant. We may be very agreeably surprised this year at the results when they come into bearing.

Mr. Longenecker: There is another thing I want to say in this connection that in the tests we have made with the phosphoric acid, potash and nitrogen it has been found that where they were turned under with clover, that there were no beneficial results to potatoes from the nitrogen

that we were using and that there was just as much return from commercial fertilizers that didn't have any nitrogen in them.

Secretary Farnsworth: I do not feel that we can afford to use very much nitrogen in our commercial fertilizers for fruit growing. I think the majority of our soils contain enough nitrogen for fruit, and if they do not, we can get it much cheaper from clover than by buying it.

Mr. Pierce: We are told in the program that no theory is wanted, must be all practice, but I heard a very interesting address by Professor Roberts at the Western Horticultural meeting of New York about a month ago, who is perhaps the best authority in the country and he made this strong point. He insisted over and over again that nitrogenous manure should not be used in orchard culture. However he would use it to form sod and then plow under the sod. Another point was that nitrogen would form foliage but that it did not enter into the composition of the fruit at all. It produced leaves at the expense of the fruit.

Mr. Woodard: I think perhaps it would be well to go a little slow on the fertilizer question, and I believe it makes a difference what kind of soil we have. With us, in our sandy, gravelly soil the farmers use very little fertilizers unless it is to get a good seeding of clover, but on clay soils I am satisfied that fertilizers that contain a large amount of potash have done our vineyards good. A neighbor of mine has used on his vineyard from 200 to 600 pounds of a potato special fertilizer per acre and it has produced good results. It contains from six per cent. to eight per cent. of potash. This brand was manufactured by Herrick, Harris & Co., of Cleveland. This gentleman that I speak of gets from an acre of vineyard from two to four tons year after year and his neighbors do not get that amount, on the same elevation and in the same locality. I have used several tons of fertilizer on my vineyard with very good results, from two to four hundred pounds per acre. That is on clay soil.

Mr. Pierce: There is another point that Mr. Woodard's remarks brought out. The potash enters largely into the wood. When you burn wood a large proportion of the ash is potash. Now in raising a crop you trim away nearly all of last year's growth. You do it in the blackberry and the raspberry and in the strawberry it is almost all new. Now is it not a good deal better if you do not sacrifice the wood of that year's growth?

Mr. Woodard: That is what we are after.

Mr. Pierce: The president suggests that the potash in the manure that you put on your vineyard is worth about as much as the crops are. (Laughter).

Mr. Woodard: The point is this, whether we shall use fertilizer and increase the yield of grapes, or not use fertilizer and not grow half as many grapes. It seems to me we need to grow all the grapes we can to make it pay at all.

Mr. Pierce: They claim in New York that you double your labor and double your crop but do not increase your profit. (Laughter.)

Mr. Woodard: I do not agree with that.

Professor Green: I find that the potato special referred to is very high in phosphoric acid but low in potash. It has a little more than two per cent. of potash and twelve per cent. phosphoric acid.

Mr. Woodard: Let me say that the firm of Herrick and Harris make a good many grades of fertilizers and I am very sure the one analyzed here is not the one I bought.

Professor Green: We cannot deny that the fruit needs potash, and potatoes need potash, but we must remember that most Ohio soils have a great deal of potash in them. Potatoes are not benefited as much by potash as they are by phosphoric acid, and I believe we will find the same thing with regard to our fruits. The phosphoric acid is the thing that is most likely to be deficient. Potash of course is needed but it is there and we do not need to supply it.

Secretary Farnsworth: I would say that in our tests we have found by far the best results on potatoes from phosphoric acid. Our soil appears to be pretty well supplied with potash naturally, and we know that the seed of the fruit is rich in phosphoric acid as shown by analysis.

Mr. Pierce: Professor Green, why don't you make another point and say that we waste most of the phosphoric acid in the common way of saving the barnyard manure?

Professor Green: That is true.

President Cushman: Are you through with the discussion of this question, gentlemen? If so, we will listen to the report of the committee on recommendation.

Mr. L. B. Pierce, the secretary of the committee on recommendations, here read the report of the committee, and upon motion of Dr. O. W. Aldrich the society decided to take the recommendations seriatim.

After a very extended discussion upon the report of the committee, the following recommendations were unanimously adopted by the society:

Committee met, with E. M. Woodard, chairman, presiding. L. B. Pierce was chosen secretary. The following suggestions, after free discussion, were recommended:

1. To discontinue February meetings.
2. To increase the time of the annual meeting to a three days' session.
3. To recommend increased effort in the direction of organizing new societies.
4. That the society insist upon the enforcement of the resolution adopted December, 1882, in reference to membership. The resolution reads as follows:

"Resolved, That the dues from each member of the Ohio State Horticultural Society shall be one dollar per year, payable annually in advance. Should any member become one year in arrears of dues, he shall be notified of that fact by the secretary, when, if he does not pay to the proper officer such dues within thirty days after notice, his name shall be stricken from the roll of members of the society."

5. Proceed to the selection of a fruit list for the state by sending inquiries to the leading fruit growers. (The scheme has already been inaugurated by the officers and has the approval of the committee.)

6. To recommend that the society appoint a committee of three to act in connection with the member in charge of the Horticultural Department of the State Fair in the annual revision of the premium list.

7. To recommend printing in our report the laws directly affecting horticulture, also a list of the officers of the local societies, and also a form of constitution for the same.

8. To recommend the exhibition of horticultural products and appliances at its meetings.

9. To recommend the appointment of a committee of three for revising the constitution and by-laws to report at the next annual meeting.

10. That we favor making an exhibit of fruit at the State Fair as intelligible as possible, and unto this end we recommend that the State Society select a special committee of three to prepare a list of tested varieties of fruit and to cause the same to be printed and posted so as to be a guide for those wishing to know the best varieties to plant.

11. That it is the sense of the committee that sectional meetings of the society are advisable, and that the plan should be inaugurated as soon after the next annual meeting as practicable; provided, that the expenses of not more than four members are paid for attendance, including the secretary and ad interim member in the district where the meeting is held.

E. M. WOODWARD,

W. J. GREEN,

WM. MILLER,

L. B. PIERCE,

N. OHMER,

E. H. CUSHMAN, *Ex-officio*.

EVENING SESSION.

Order was called by the president at 7:30, who announced that the first thing upon the program for the evening would be a paper by Mr. E. F. Stoner, upon "What varieties should commercial growers plant?"

Mr. Stoner: I will say that I do not expect to cover this subject, but I will mention a few of the leading varieties, confining myself to those I have found profitable.

WHAT ARE THE MOST PROFITABLE VARIETIES FOR THE COMMERCIAL GROWER TO PLANT.

By way of introduction I will state to this society that though I am a large grower of small fruit plants, I issue no advertising circular nor make any special effort to seek retail trade, as my plants are grown under contract for large dealers and nurserymen. Any remarks I may make concerning the comparative merits or demerits of certain varieties are influenced by no other motive than to bring out a useful and instructive discussion of that live horticultural topic. What shall we plant? Combining the title of a popular novel and the expression of members of Congress, "Looking Backward, let us see where we are at." In the immediate past the year 1895 was to the larger number of fruit growers, especially of small

fruits what the Russian campaign was to Napoleon. All powers, acquired skill and courage, all industry and long and costly attention went for naught against the all-destructive agency of a totally unexpected enemy. The beginning of May, 1895, found all the fruit, field and orchards, of the great Miami valley resplendent with the rainbow hues of promise; in regular array they wore upon their crests the blossomed banners of victory and the fruit grower and his vast army of dependents from the berry pickers down to the street hawkers were hopeful, but like the rest of humanity, we are doomed to taste the bitterness of disappointment.

As legion after legion of the grand army of France succumbed to the awful severity of Russian winter, so the prospective profits of our fruit growers vanished in deadly destructiveness of a May freeze.

In the past year the small fruit growers experienced a series of disasters which were well calculated to dampen the ardor of the most enthusiastic horticulturist, but remembering that such a season is not likely to duplicate more than once or twice in a lifetime, the true devotee to the art and science of fruit growing proceeded to extract useful lessons from the very blows that seemed aimed for his destruction.

One of the most important lessons that was learned from last year's failure of the fruit crop, though it was a lesson to the community in general rather than to the fruit grower himself, is the immense industrial importance of fruit culture where it is followed to any great extent. "As we never miss the water until the well runs dry," it was not until the fruit crop was destroyed that it was clearly seen that neighboring community suffered as much as the fruit grower himself, for fully one-half of the money we recover for our crop is paid out for labor and necessary supplies. In many cases whole families, largely dependent on picking berries for employment, felt keenly the loss of a greater portion of their summer's income. To the hopes of rosy-cheeked young girls who regularly work in the berry fields no strawberries to gather meant no new white dress and no excursion tickets to summer picnics.

But to return to the subject of varieties, I will endeavor to give some facts deduced from an experience of some ten years of extensive planting. As it is true with breeders of live stock, so also it is true with fruit growers that the differentiation of a single variety suited to surrounding circumstances and conditions makes all the difference between financial success and failure in our business. We will begin with the strawberry, not only because it is the first berry of the season, but because the cultivation of this universally popular fruit is the mainstay of our business, the anchor of our whole system. More has been said and written on the strawberry and more effort has been put forth toward its improvement than on all other fruits combined, and this apparently extravagant attention is not undeserved. From a rare luxury of a wealthy few strawberries in their season have become almost a necessity of the many. Strawberries are much more certain to bear, come into bearing earlier and yield greater return for skillful cultivation than any other fruit.

If you intend to engage in fruit culture plant strawberries: by your success or failure with them will be measured in a large degree your success or failure with other fruits. As to varieties, it depends largely on character of soil, markets and method of cultivation, but you will be comparatively safe to begin with Crescent, Haverland, Greenville and Bubach for croppers and Lovett and Muskingum for foliagers. As you grow more skillful in cultivation, experiment with a few of the most promising seedlings that are put forward every season.

Raspberries next claim our attention. As an example of what the introduction of some decidedly superior varieties will do in fruit culture, I have only to mention the Gregg and Souhegan raspberry, which have become generally disseminated in the past ten years. In many places such large yields from these

varieties that the markets have been temporarily glutted with black raspberries. Though the Gregg still holds its leading place among the latter sorts, the new Eureka is so far superior to any and all of the earlier and medium ripening varieties in quality, size and productiveness that I would without any reservation recommend it as the most valuable black raspberry in cultivation. A close observation of the demands of the markets for the past few years indicates that red raspberries are rapidly taking the place of black raspberries in hotels and private families, hence any improvement of the red varieties is watched with a great deal of interest by commercial growers. Most of the earlier reds are too frail and delicate to stand even a short transportation, and the Cuthbert, which has been our most valuable red variety, ripens too late, and is not all that is required in shade of color. We confidently expect great things of the Miller's Early and the Loudon, and would recommend them as a perfectly safe investment, even at the present high price for plants.

Among blackberries for anything like a certain cropper we have been narrowed down to the Snyder, but dealers and consumers are constantly reminding us that we ought to grow a berry of better quality. That eminent horticulturist, Kellogg, of Ionia, Mich., stated in my presence that the man who will introduce a blackberry that is as hardy and productive as the Snyder and of decidedly superior quality deserves to make a fortune out of its dissemination.

Among the many new varieties of recent introduction, some of them possessing undoubted merit, we have chosen the Eldorado as the most promising one, and we sincerely hope that our expectations of this quite remarkable variety may not be doomed to disappointment.

Mr. Stoner (continuing): I will state my experience with regard to the Eureka. Three years ago I got 500 plants and put them in a field of some eighteen acres of raspberries containing Gregg, Ohio, Palmer and Souhegan and it had exactly the same culture but it grew better than any other plants I had in the field, and those Eureka rows produced twice as many berries to the row as any other variety in the field. There are other black raspberries that are worthy of our attention, but I have not yet experimented with them. We have sold black raspberries in the Dayton market at \$2.00 a bushel when at the same time red raspberries were selling at \$4.00 per bushel.

President Cushman: Can't you afford to raise black raspberries at \$2.00 a bushel as against red ones at \$4.00?

Mr. Stoner: That depends upon how easily we get the red raspberry and how successfully we can grow them. I planted some of the Millers' Early last spring and they had a few scattering berries on them. They came to us well recommended by a man in whom we have confidence and we would recommend them as perfectly safe in this county even at the present high prices, for any body who is looking for a real good red raspberry.

With us the Taylor berry is better than the Snyder, I have heard Mr. Keyfauber, the largest wholesale dealer in Dayton, say, "I have orders for hundreds of cases of fancy blackberries, but I cannot fill them with the Snyder." He had plenty of Snyders. We could very easily have gotten \$4.00 a case for fancy berries, and we were getting

\$2.50 for the Snyders which can be raised very profitably for \$2.50. We have grown beside the Snyder, the Early Harvest and the Taylor and others, but for anything like a real cropper we were narrowed down to the Snyder. We make money on Early Harvest. I planted them on some thin, barren soil where I could not raise anything else, but they are too tender for this climate. They are very popular in Kentucky and St. Louis.

I plant extensively of pears, and there again we are narrowed down pretty close. We have found but two pears that we can put on the wholesale market and make any money out of. The Kieffer has come to stay. Last year as plentiful as pears were we received a dollar a bushel for very inferior Kieffers. They would have been worth a dollar and a half a bushel if we had taken the precaution to thin them. I got a dollar a bushel for the Kieffers wholesale as they came from the tree by the load. My Bartlets I sold for two dollars a barrel, netting me about sixty cents a bushel for the whole crop, but we could not unload anything but these two varieties in bulk.

In plums I had an orchard of 120 trees consisting largely of Richland, a few Moore's Arctic and a few plums of a green character, I think the Spalding, and the Lombard. Plums bore very profusely. I expect to plant plums very largely and I expect to plant the Moore's Arctic. Some trees bore three years from planting and have brought us more money than the Lombard, they sold readily at \$3.00 a bushel in the Dayton market.

Among peaches, I have 3,000 trees five and six years old, and the buds were all right last evening. Those trees I planted five or six years ago. I bought a lot of budded fruit from a nursery company, sold cheap as second class trees and cut them off close to the ground, and they comprised every variety. They disappointed me. I do not know what is in there; they are all budded fruit. But since that we have been paying some attention to the experience of other men. I have planted some Diamond, some Crosby, some Elberta and some Champion. The Champion and the Crosby come highly recommended. The practical point is to get a peach that is of fair quality and that will be hardy in the bud.

I have been raising a good many currants and I find among the old common sorts the best thing I grow is the Victoria. I learn that a great many people are crying down the Fay. I raised them last year very successfully. The Victoria is rank and very hardy. It sold at the ordinary price of red currants. The North Star is one of the most promising currants. We fruited them. I will say this, they are the most vigorous grower and one of the surest currants to bear, but I cannot say that the quality is any better than the common Red Dutch. I will see it fruit a year or two before I can say it is better than the common red

currant. Unlike a great many vigorous growers the North Star is an exception. It will bear all the way along the branch.

Mr. Woodard: I would like to ask the gentleman what his objection is to the Taylor blackberry?

Mr. Stoner: There has been but one or two crops of Taylor in this neighborhood to my recollection to amount to anything. They come too late for our extremely hot summers. When it gets into the first of August it is too hot for blackberries.

Mr. Moore: Did I understand Mr. Stoner to say that the Crescent, the Haverland and the Bubach were the only strawberries he raises?

Mr. Stoner: I grow a great many other berries, but I have the Crescent, the Haverland, the Bubach and the Greenfield, with Lovett and Muskingum for fertilizers.

Mr. Moore: I was wondering how he got berries without something to pollinize with.

Mr. Stoner: We use them very freely.

Mr. Moore: I want to ask the gentleman another question. What was the objection to the Snyder?

Mr. Stoner: The quality of the Snyder is all right. It will can and stew as good as any blackberry that grows, but it has not the size nor the appearance of a first class blackberry, that is, it will not compare with the dew berry.

Mr. Moore: How about the Garfield plum?

Mr. Stoner: I did not mention the Garfield. I only mentioned the Moore's Arctic and the Lombard.

Secretary Farnsworth: Mr. Stoner's experience has been very similar to my own. I have been trying to grow blackberries for seventeen years. I first planted an acre of Kittitiny. I allowed them to grow several years and got a full crop, and a partial crop I sold \$165 worth from two-thirds of an acre, but the severe winters made them unprofitable. I found the Taylor was a good berry but hardly profitable. The Snyder I spoiled by making the ground too rich. We got a growth eight or nine feet high. I set out another patch on thinner soil, but I did not get a good crop, beside that I was always ashamed to take my fruit to market. Either my soil is not adapted to blackberry culture, or I do not know how to raise them. In regard to the Eureka I do not know that I can add anything to what Mr. Stoner has said. I can endorse everything that he has said. One thing that I can say in regard to the Eureka is that it is as firm as anything we have except the Gregg, and that I consider it away ahead of anything else we have. I have a number of varieties, the Gregg, the Palmer, the Hilborn, the Conrath, the Lotta. I have not, however, the Souhegan. I am not planting any of those. I am planting the Eureka exclusively.

As to currants, I suppose you know the Victoria has been a favorite of mine for seven or eight years. A few years ago I picked thirteen

quarts from one bush. I have grown them almost exclusively. One of the greatest recommendations that have been given to the North Star is that it is better than the Victoria. The Fay's Prolific is not perfectly satisfactory as a rule. Mr. Counter grows Fay's Prolific very successfully, and he is the only one that I know who has made a success of it. I have seen this currant on the clay and on the sand and he is the only successful grower of Fay's Prolific that I know of.

Mr. Pierce: What is the reason?

Secretary Farnsworth: It is probably a peculiarity in the soil. His soil is rich, but I do not think he gives them any extra culture. I have seen them growing under other conditions apparently just as good and they have failed. I have had them on the clay and on the sand and I never have succeeded with them. The Red Dutch would be my second choice.

Mr. Stoner: One superiority of the Victoria over the Red Dutch is that it does not seem to be affected by borers and it lasts much longer.

Secretary Farnsworth: The fruit is not equal in size to the Cherry. I think the quality is better, but the fruit is very good size if you keep it well fed. I put my currants and gooseberries on the heaviest soil. You want to prune them closely and cultivate them early.

Professor Green: You mean cut them back?

Secretary Farnsworth: We do not cut back to any extent; we thin out. I cut back severely when I first plant and after that I do not cut back any unless it is a shoot that runs out a great deal farther than the others. But after we have two crops then I begin to thin out.

Mr. Longenecker: I would like to ask Mr. Farnsworth whether in cutting back much of the undergrowth he does not find that many suckers come up from the ground and make what we would call canes from which we could get cuttings?

Secretary Farnsworth: If you cut out all the wood you can when they are young you will get a good many young shoots, but after the fruit gets to bearing we do not prune out many canes.

Mr. Pierce: That is the proper way to prune currants, cut out one-third every year.

Mr. Stoner: In speaking of the Snyder blackberry I want it understood that I am not abusing it. I have had as high as 500 bushels on five acres. I have been getting Snyder blackberries every year. Never failed till last year when they were killed in the bloom. I attribute my success in growing Snyder blackberries to mulching. I have as fine Snyder blackberry patches as I have seen and we have never had a plow in them. I broke the old canes down and put more mulch in this year. I have some five acres mulched that way and have practiced that now three years and I always get good crops. On that system they will produce on an average of from 80 to 100 bushels per acre and we can get \$2.50 wholesale. We have but very little expense in cultivating.

This mulch seems to hold them up very nicely. I am a friend of the Snyder blackberry, but I am looking for something better.

Question: How deep do you put on your mulch?

Mr. Stoner: You cannot get it on too deep.

Mr. Pierce: You say the Cuthbert is not exactly the right color, and the Louden comes a week later at the end but is not any earlier in the start. I do not see how that is going to be any better than the Cuthbert. According to Mr. Kellogg if we get a red raspberry that is firm we are going to get one that has not much quality to it. Softness goes with quality. If we get a very firm berry it will be more or less worthless.

Mr. Whitney: I invested in 100 Loudens last spring, and I will give my experience. I never had a red raspberry that produced half as much as they did.

Secretary Farnsworth: I planted 100 last spring with the same results. They made a remarkable growth. We kept most of the fruit cut off to get all the growth possible. But I can see that Mr. Pierce's objection will hold good with them. The early red raspberries will bring from \$4.00 to \$5.00 per bushel, but as soon as the Cuthbert come on they will drop right down. I plant the Louden and they are no doubt valuable, but I am afraid they are not what I want for that reason. They may take the place of the Cuthbert, but the Cuthbert is too late.

Mr. Pierce: Six bushels of Turner raspberries were marketed in Akron at \$5.50 per bushel. The same man marketed ten bushels of Cuthbert at \$2.00 per bushel.

Professor Green: I believe there is more money in the Turner raspberry than any other raspberry in existence to-day; that is, if you grow it rightly.

Question: Do you grow them in hills?

Professor Green: Either in hills or in rows. They are firm enough to ship for a considerable distance.

Mr. Pierce: How much do you cut back?

Professor Green: After there has been a good deal of growth I would say one-fourth.

Question: Would it answer the same purpose to thin out the canes?

Professor Green: No, I think it will not. They set too many berries if they grow as they ordinarily do, but if they are cut back it answers the purpose of thinning. They are of a good color and pretty fair quality and will always sell well. Then there is the Brandywine that seems to have been overlooked. It is profitable on most soils; it is very firm but not very good quality. It is quite prolific. I do not see why the Ancient Britain blackberry has not been grown more. I believe it is superior to the Snyder in appearance; perhaps about the same size, will yield about as much as the Snyder and is fully as hardy. The berries are more even in size.

Mr. Pierce: Isn't the Western Triumph a good one to raise? Mr. Kellogg, of Michigan, says he has made more on it than on the Snyder.

Professor Green: I am surprised that the Warfield was left out.

Mr. Stoner: I never could grow the Warfield with any success. The berries were too small.

Secretary Farnsworth: Professor Green speaks of thinning the Turner. We have found that very essential in the Cuthbert. My rule was to thin out leaving about as thick in the row as you would drill corn, say one cane every ten inches and cut them back to about three and one-half feet high. That looks like a pretty small amount of wood, but by picking time we got an immense amount of foliage. The Cuthbert has been the only red raspberry that has been successful with us. I grew Brandywine considerably and find it quite productive, but I didn't like its habit of lasting all summer. It is firm, the color is good, but the quality is very poor, though it would sell in the market all right.

Mr. Longenecker: Probably one reason why the growers are watching for red raspberries is that it is only a few years since they were selling them for \$1.50 to \$2.00 per bushel and we did not feel that we could grow them for that and quit. We find that the market can be glutted with red raspberries easier than with the black. In growing red raspberries it is best to keep them thinned, for if we let them grow thickly those buds down along the side of the cane are smothered out and the better fruit buds will be toward the end of the cane and if we top them we cut away the best fruit buds.

Mr. Waid: I would like to ask Mr. Stoner what proportion of pollenizers he uses in strawberries now.

Mr. Stoner: When we had to rely upon such berries as the Cumberland, Dayton and such things which we were pretty sure would never give us a very profitable crop any way we got along with just as few pollenizers as we could, but since we have the Lovett we take the advice of professor Green and other men who have been experimenting in that line and plant them in about the ratio of 1 to 3 or 1 to 4.

Mr. Freeman: The small fruits have been pretty thoroughly discussed, but the apple, which is the most important of all our fruits, has been somewhat neglected in this discussion. Most of us have a hobby on something and I will say this that my hobby is roadside planting. I have upon one of my farms 650 trees planted, and I have received in profit from those trees about as much as I did on the 144 acres, the balance of the farm. Now, I was very much impressed with this, having been to Cuba twice in my time, and there I found that there were two rows of orange trees planted on either side of the road, and I put the same thing into practice when I got to farming. Now there are three points that I advocate to the advantage of roadside planting. The first is that along the roadway your land is perfectly drained or nearly so; the next is that you have the fertility of the soil in its virgin state. There

is not one farm out of ten that has been plowed next to the road since it was first cleared. And the next advantage is that you have the opportunity of spraying your trees from the roadside. I am not talking theory now; I am talking practice. And a fourth point, I use my trees as fence posts. You may ask, How can you do this? I do it by taking a piece of wood 2x2 and three feet and a half long, bore a hole in each end and bore into the tree an inch or an inch and a quarter and use screws with long heads, and put them through the wood and screw them into the tree. I have one row that I have had the fence upon now for ten years. Now, varieties to plant along the roadway is an important matter. You should plant varieties that grow upright. The Minkler would not do for that at all. It spreads out too much. In twenty years I have known trees to spread thirty feet each way. This is the best tree to grow for profit I have tried. I now have trees about thirty years old. Next would come in the Rome Beauty.

The next would be the pear. I have had several orchards of pears planted. In the first orchard I planted 200 about 33 or 34 years ago. They were Bartlets largely and some of those are standing yet, but I would never advise the planting of dwarf pear trees, because those planted about the same time have died. The second orchard has about passed out. The winter of '81 and '82 so badly affected our trees that it was necessary for us to put out new orchards if we desired good fruit. Among pears the Flemish Beauty and the Bartlet have been the most profitable I have grown. I have a pear orchard of 2,000 Kieffer, 400 Columbia.

Now in regard to the peach, I believe that Mr. Stoner has left out one of the most important points attached to peach growing and that is the variety that we should plant in this locality. Having an idea of planting a peach orchard some four or five years ago through circumstances that occurred one way or another I was impressed with the fact that I should go into the peach region and learn what I wanted to know, and I visited Chillicothe, and General Hurst and John Hurst and Rev. George Carpenter for the purpose of learning of the commercial value in peaches. They took me out into their orchards and there were some very fine peaches on the trees. I asked them how many varieties they thought a man would be safe in planting for commercial value. They said, "We have forty varieties in our orchard and we could not recommend over six." That was a stumper for me because I had been selling trees for forty years and I supposed all of them were good (laughter). From those I selected the varieties I should plant for commercial value and took them home and budded them. I have had some peaches, but not quite so many as Friend Albaugh who is interested in peach growing. But the place I planted my orchard was on a very high hill four hundred feet above the valley below. It was a new piece of ground that

we had cleared. Now, if I would give you some figures I do not know whether it would interest you.

President Cushman: I believe it would be of interest.

Mr. Freeman: The cost of the 95 acres of land was \$425; clearing \$800; digging holes \$240; trees altogether \$960; plowing \$610; building house \$1,200; sprouting \$800; miscellaneous, such as making fence, \$200. On this we have \$5,235 for 95 acres of orchard. Now to continue, the planting of our orchard may be profitable to some of you who want to go into the orchard business. In laying off our ground we had to buy of seven different men, and we got a ridge of land three-quarters of a mile long and laid off a roadway right in the centre of it, and on each side of this roadway we planted two rows of Kieffer pears. They have been out now for three years and bore a good many pears last year and not a sign of blight upon them. We had the holes dug thirty inches square and about fifteen inches deep, paying a darkey one and a half cents a hole to dig them. We filled up nine inches when we planted the trees and set the trees on top of that. Three men constituted a planting team, one to hold the tree and two to use the shovels. These holes were dug in the fall and I will say that it proved a great success because the ground three or four inches back from the hole mellowed up.

President Cushman: What was the nature of the soil?

Mr. Freeman: The soil is a sandstone underneath which is a soft clay that will hold moisture. Now, the planting of our trees in this manner gave us a growth in several cases in which the trees that were planted in the spring, that in five months after that time they had eleven limbs upon them that were as large as the tree when we planted it. That will give you an idea of the fertility of the soil.

Now the treatment of the trees. I have had our trees trimmed closely, and we take two gallons of soft soap to a barrel of water, a half pint of carbolic acid and a pound of blue vitrol. We dilute this together and in it we dip all of the trees. They stand a few seconds in that decoction, so that if there were any borers in the trees they would be destroyed, and after we get through dipping the trees we put them into a pile and throw the balance of the solution over them. A man who saw the trees said they were in a terrible fix and that they were mildewed so they would never grow at all. The result was in the first four thousand treated in that way, when we went over them thoroughly in the fall, we found practically no borers in the trees. You may say it was new ground and it had no effect upon them, but we put out some peach seedlings close by and after two or three crops they show that they were affected in this manner. The next season we planted 6,000 and put them out in the same way and the first year we found no worms. It certainly kept them out the first year. This is our experience so far and as Mr. Stoner says, we had great promise of fruit up to the last I heard from them. Now to give you an idea of the temperature and alti-

tude, I will say that on the first day of January the thermometer stood at ten above on the hill and two below down in Georgetown, 400 feet lower. On the second it was six above on the hill and two below; on the third it was eight above on the hill and zero down below. On the fourth it was six above on the hill and zero down below.

I have given you our little experience with the planting and cost of an orchard which I hope may be of some benefit to some of you.

Mr. Longenecker: What variety of peaches did you use?

Mr. Freeman: That matter I left out. On examination around Chillicothe I found the Smock, Stump, the Salway, Gudgeon's Late and Troth's Early, which Mr. Hurst says is the first peach of an early nature for him to ship away and get into market in good order. We have not left out the Crosby nor the Elberta. We have 15,000 peaches planted and have 9,000 of these three kinds, the Stump, Salway and Smock.

Mr. Moore: How do the Crawford's compare with the other?

Mr. Freeman: We will admit that the Crawford is a good tree and the fruit is good to market, but as Mr. Hurst says, a tree that looks like it has a bushel on it will have but a half bushel. The reason I selected these was because I found on investigation that they had peaches sometimes five years in succession, and the old citizens there assured me that they thought I could estimate one in two, but I thought I would rather risk one in three.

Mr. Albaugh: I feel sure that Brother Freeman has missed it in not planting more Elberta. The Elberta is as fine a looking peach as the Crawford's Late, as large and is hardy in bloom. The Elberta is one of the best I believe for all-round peaches we can plant.

Question: What was that early peach you had down there, I believe it was called the Lady Ingold?

Mr. Albaugh: The Lady Ingold is as large as the Crawford's Early, and usually is ten days earlier.

Mr. Miller: How does it compare in time of ripening with the Early Crawford?

Mr. Albaugh: Ten days earlier than the Early Crawford.

Mr. Miller: How about the Champion?

Mr. Albaugh: I never fruited the Champion, but as I understand it is counted a very early peach. We have planted some but they have not yet come into bearing. It ripens about the first of September in this latitude if I understand it. What I have said of the varieties of peaches is what I have seen.

Mr. Stoner: Mr. Freeman made a remark about planting along the roadside. It will do for one class of fruit not mentioned here this evening and it is a class of fruit that I have made more money on this season than anything else, and that is cherries. Since we put those cheap wire fences along our roads I have thought what varieties of trees can I plant along the roadside that would do in sod? And I have found that cherries

will fill the bill. I have seen several handsome rows of cherries on the roadside that didn't take up any room. I believe if I wanted to plant trees along the road, leaving the ornamental part out of the question I would plant cherries.

Mr. Miller: What varieties?

Mr. Stoner: Early Richmond and Dyehouse.

Mr. Freeman: I have a little matter that I left out, in regard to thinning apples and pears. In the Kieffer pear at home I thinned them down to four to the foot; when they are about one-third their growth where two touch each other I take off one, and I realized more money out of my pears, my Kieffer pears, than anything else that I grew on that land. They were fine specimens and well colored, but the Kieffer pears that were grown on gravelly soil were not worth picking, not worth anything for commercial use. It is very important if your trees stand upon gravelly soil that you mulch them well and thin them. The trees I have planted along the roadside I cultivate once or twice a year while they are young, spading up around them, and using a small amount of coal ashes. I make a little mound around them that keeps the mice away in winter and the snow will blow away from those ashes. I have not been troubled in the least by their being affected by the mice.

Mr. Moore: I want to ask Mr. Freeman whether in planting those trees along the roadside he does it for gain or for the public welfare?

Mr. Freeman: Mr. Moore, I have a great many trees standing along the roadside and I doubt whether I have ever lost a dollar's worth of fruit.

A Member: You look like an honest man.

Mr. Freeman: Yes, and it is generally imparted to the neighborhood. I might extend it a little further and say that upon one side of my farm there is a grange hall and at the other side the high school of the township, and I have never lost an hour's sleep.

President Cushman: We have upon the program for this evening an excellent paper by Mr. Miller. I speak this way because I have the pleasure of knowing something about it. (This paper was omitted on account of lack of space.)

Mr. Freeman: I believe there is a question to be discussed in regard to pruning peach trees to keep them from breaking down. Is this the time now for that discussion to be called up?

President Cushman: It seems to me that there is no better time than this to discuss that question.

Mr. Freeman: I did not speak in regard to the mode that we trim our peach trees. The last two years in Indiana and Ohio have been pretty hard on peach trees, affecting the wood somewhat, and we cut back a little over one-half of the growth of the first year, thus making the buds somewhat dense. Now I should like to ask for information what time they should be thinned out. According to my views of trim-

ming, if it is done real early it would admit the sun and the cold and it might affect the bloom. I would like to call out practical discussion on this point if possible.

Mr. Albaugh: I want to say that the heading in process is very important, and more important in the north than in the south. Of the whole 100,000 bushels we picked we never used a box, chair step-ladder or anything else, but picked them right from the ground. It saves a great deal of work if you can keep your peach trees down. They were trimming when I was down there about a month ago. We use shears to clip off the limbs. We do not trim out much of the inside. As Brother Miller says they will bear just as well on the inside as on the outside. In all that whole orchard there were not a dozen trees with broken limbs in spite of the fact that all were picked from the ground.

Speaking of trees and the manner of planting I would say that we prefer from our experience to plant what we call the second size, about four feet instead of six feet and three-fourths of an inch in diameter. We prefer the smaller tree. It makes a larger tree when it is four years old. We planted one orchard of 40,000 trees, standard trees. I would prefer planting a tree not over two feet high and not thicker than a lead pencil, to the larger trees.

Mr. Scarff: Do you cut the roots off?

Mr. Albaugh: I think I saw some Texas fellow who wanted to cut off all the roots of the peach trees within an inch of the tree. Cut the roots and the top both off. I think that is a great mistake, and that is one of the reasons I prefer the smaller tree. I like to have all the root I can get to them. I have been for years and years in the nursery business, and I was one of the first of the nursery association to advocate the apple tree growing with the whole roots instead of cutting them off, until now nearly all the nursery men of any large commercial standing plant whole roots. Pruning the roots as was recommended is a mistake.

Mr. Aultfather: Some people like to raise highly colored fruit, especially peaches, and I would like to ask where these trees are left untrimmed on the inside of the tree whether the peaches are as highly colored as upon the outside of the tree?

Mr. Miller: I think they are, Mr. President. That, I believe, depends more upon the amount of foliage upon the tree and the soil than it does upon the little shade from the inside. This gentleman asked when he should thin out the inside of his peach trees. I would never do it until the little branches died.

Mr. Freeman: I do not know whether they would die if you cut them off at the end.

THURSDAY MORNING SESSION.

At nine o'clock order was called by the president who said: "There was so much fruit brought and placed upon the table that it will be advisable to have a committee appointed to report later in the day upon exhibits, and I will place upon that committee Mr. Longenecker, Mr. Moore and Mr. Aultfather."

The question box was first taken up.

Question: Does the codling moth deposit its larvae in the day time or night?

Professor Lazenby: Mr. President, I suppose what is meant by the question is whether the perfect insect, that is, the codling moth is a night-flying insect. It is reported by entomologists that the eggs are deposited at night. That is the reason I suppose that we do not often see the codling moth and do not know the perfect insect as well as some of the other orchard pests.

Question: Will the Champion quince do well in Montgomery county, Ohio?

Mr. Ohmer: I have tried several kinds of quinces, especially the Orange, and there is nothing that does so well as the Orange quince. I have the Ray's Mammoth, but it does not do so well.

President Cushman: What is the value of the Champion quince as a market fruit in Ohio?

Secretary Farnsworth: It bears very early. I think that is its only advantage.

Mr. Ohmer: That is a disadvantage as a rule. The men who handle quinces in this state do not want them early.

Secretary Farnsworth: I should have said it bore very young.

Mr. Pierce: It is too late for any good.

Mr. Ford: In regard to the Champion quince, I have tried to grow some for the last ten years and I have never seen but three or four quinces. The trees blight every year. At one time I saw John S. Collins' quinces growing in New Jersey. I could see two rows of his quinces for twenty rods and they looked worse from blight than any pear trees I ever saw. As Mr. Ohmer says, the Orange quince is the quince of to-day. It is ahead of anything I have ever seen.

The Secretary: The Champion yields better for me than anything else.

Mr. Whitney: I planted about 150 Champion quinces once but I have not got them now. I planted 150 Orange and 150 of Meech's Prolific, and I haven't them now either. They are nearly all killed and the balance were worthless. I bought my Champion in New Jersey and when we took them out of the box there were two nice full-grown quinces hang-

ing on the bushes. I set them out and cared for them three or four years, but I never saw any more quinces on them.

Mr. Scarff: I would like to ask if quinces will grow on apple roots and do as well as on their own roots?

Mr. J. A. Flory: I think they will. For the purpose of starting the quince on the stock set deep and eventually the quince forms the stock and the apple root dies away.

Mr. Ford: Then you virtually have a quince on its own root.

Mr. Buechly: My experience with quinces on apple roots is just about as Mr. Flory said, and in about one season the quince will be on its own roots. We aim to make only a short piece of apple root in order to keep the quince alive until it strikes a root of its own.

Question: The apple root dies?

Mr. Buechly: Yes, sir, it dies.

Mr. Albaugh: The better way is to grow a variety of fruit upon its own stock. Pear grafts can be put on apple roots in a year or two pretty well. Quince grafts may be put upon apple stocks and grow a year or two fairly well. It might pay an amateur to fool around with such things.

Question: What will prevent the ravages of the saw-fly on currants and gooseberries?

The Secretary: The saw-fly is the parent of the currant worm. I use paris green. Early in the season before fruit sets I think it is a little surer to be pure. I use hellebore after fruit sets.

Mr. Whitney: I use paris green. I do not use hellebore.

Mr. Waid: I would like to ask Professor Lazenby where the first crop of currant worms comes from?

Professor Lazenby: The fly deposits its eggs on the leaf.

Mr. Waid: Then there are none of the worms that go into the ground and come out of the ground again?

Professor Lazenby: Not as worms. They come from the ground the perfect insect and then the perfect insect deposits its eggs on the leaf.

Mr. Ford: I have found no difficulty in exterminating the currant worm with white hellebore. We used to apply it by putting it into cold water and steam it, but it was not very effective, but you take a spoonful and turn boiling water upon it and you will have something that will kill the worms all the time. It wants to be steeped.

Mr. Longenecker: No one doubts but that the paris green will destroy the currant worm, but certainly this society wants to take the position of discouraging the use of paris green wherever there is any fruit for we can undoubtedly control it by the use of white hellebore.

Mr. Freeman: In what stage of the leaf did you put on the paris green?

Secretary Farnsworth: We wait until the worms are hatched, but spray them before they get very generally distributed.

Question: In planting one hundred apple trees in Fairfield county for commercial use, what kind would you plant?

Secretary Farnsworth: I find the Grimes Golden are generally recommended all over the state. It is good with us. Many of our varieties would not do in Central Ohio or Southern Ohio.

Mr. Ohmer: If I were confined to one apple, for I suppose that that is what this man inquires about, I would plant Baldwins. I am speaking for myself here in Dayton.

Secretary Farnsworth: The Grimes Golden is a grand apple. It is good to eat and cook and sell. It is a good grower. Where it is a short-lived tree I would obviate that by top-grafting on hardy stock.

Mr. Freeman: The great difficulty with the Grimes Golden is its dropping off prematurely, before it develops well.

Mr. Moore: I have had the privilege of examining the exhibits in Fairfield county some few years ago several times and I found there that the Grimes Golden has been shown to perfection. Another one that did well there is the Jonathan, and another one, a good late keeper, is the White Pippin or Winter Pippin. These three varieties were there in a good many parts, that is, from ten to twelve plates of each, and I think from the exhibit there they would be pretty safe to plant.

Mr. Longenecker: How about the Rome Beauty?

Mr. Moore: The Rome Beauty was good, but not quite so good as the others. They were all specimen apples. The Jonathan that were on exhibition were very large.

Mr. Longenecker: I believe that the Grimes Golden is an apple that the fruit growers of Ohio of this altitude are overlooking, and if you go into the southern part of the state you will find a number of prominent fruit growers who report it as one of their most productive apples.

Mr. Albaugh: I would suggest in answer to that question: Grimes Golden, Baldwin, Rome Beauty, Stark, Maiden Blush, and then try that new Half-Ben Davis and Half-Baldwin in all its characteristics, the Missouri apple, the Gano, which has the flesh of a Baldwin and the appearance of a Ben Davis.

Mr. Aultfather: The business committee suggest that we listen to Professor Lazenby on the subject of Judging fruits, which was left off of the program yesterday.

Professor Lazenby: I regret that this subject was placed formally upon the program as that was not my intention. I wrote to the secretary suggesting that if there was time I thought it might be well to devote a few moments to this subject.

The points I wish to mention are these: Mr. Matthew Crawford some two years ago called my attention to this subject of judging the fruits grown in the state and especially those that are not generally ex-

hibited at our county and state fairs. The idea being to find out as far as possible where the best fruits are raised in the state and who are the most successful growers. He suggested that specimens in the proper time of these fruits, beginning with the small fruits early in the season and continuing throughout the season should be sent to the university or to the experiment station and there passed upon according to a scale of points, and a record kept, and all prominent growers throughout the state, amateur as well as professional, be requested to send specimens. It seemed to me that there was something of value in this suggestion, and a slight attempt was made last year to do something in this line, but owing to an unfavorable season as far as regards small fruits, but little was accomplished. A number of samples were sent in and we found it was of considerable interest at least to know in what part of the state good specimens were being produced. A few new varieties came to hand and these were carefully examined. There was this difficulty, however, that the fruit sent in did not always arrive in good condition and I suppose that that will be a difficulty that will be hard to overcome with some of the more perishable fruits. Wouldn't it be possible for the ad interim committeemen in the different sections of the state, as the state is now districted, to make that a part of their duty as far as possible to invite exhibits of fruit, visit quite generally the plantations where they are known to be of unusual grade and report very fully upon the different varieties, I mean a detailed description of the best fruit that is grown in their respective portions of the state? If this could be done I think it would add strength and value to our ad interim reports. Of course it is interesting to get a general description of what the fruit prospects are and what the results have been, but if we could come down to more details and have the names of some of the most successful growers in the different districts, the names of the best varieties of all of our small and large fruits I think it would add a good deal to the value and interest of our meetings.

The point is: Wouldn't it be necessary to have a standard by which to judge these different fruits? Is the society prepared at this time, and is it a practicable thing, to adopt what might be called a scale of points, so that all those who attempt to judge fruits at different places like our state and county fairs would have something to guide them? A considerable of this work could be done at the experiment station, considerable of it could be done at the university, and the ad interim committeemen might do considerable of it, to make it of value. Ought we not to have a uniform scale by which this judgment is rendered? There may be certain difficulties in the way but it seems to me that the time has come when we ought to know what constitutes perfection in our different fruits, what is demanded in the ideal or perfect fruit, and then see how far the specimens that are submitted to us lack in these different points. We know very well that stockmen throughout the state have their scales

of points and they judge according to the scale that is adopted, and secure in this way uniformity. I believe that something of this kind can be done by our state horticultural society.

Mr. Woodard: Since the matter has been discussed wouldn't it be well refer it to the committee that is to prepare a fruit list for the exhibition at the state fair next fall? They can take this matter under advisement and if they think advisable prepare a scale to submit at the next meeting. I therefore move that this matter be referred to the committee named and that it report at our meeting next December.

(Motion carried unanimously.)

Secretary Farnsworth: It occurs to me that perhaps it might be a graceful thing to do to make the secretary of the State Board of Agriculture, Mr. W. W. Miller, an honorary member of this society. He has shown a kindly interest in us in our connection with him and I think it would be no more than proper for us to do this.

Mr. Ohmer: I think this is the proper thing and I make a motion to this effect.

(Motion carried unanimously.)

President Cushman: Our secretary will communicate this fact to Mr. Miller.

Professor Lazenby (in the chair): The next subject before the society is Grape growing in Southern Ohio, by Mr. T. F. Longenecker, of Dayton, Ohio. (This paper was omitted on account of lack of space.)

President Cushman: This subject is now open for discussion.

Mr. G. W. Shinkle: I may say that in Brown county we have no trouble in raising very fine specimens of grapes. We can raise them almost to perfection. The great difficulty there has been to find a sale for them that is profitable. I have failed to find sale for them in reasonable distance of where I live at even two cents a pound. I have had as fine crops as I have seen anywhere. Last year the frost did not hurt our grapes.

Professor Lazenby: It is well known that in some of the earlier works on grape culture published in this country the southern part of this state was recommended as one of the most profitable sections of the state, and the Ohio River was spoken of as the "Rhine of America," in that connection. It was supposed in early days it would become famous for its vineyards.

President Cushman: I have been expecting Brother Woodard to mention the difficulty that our grapes have to contend with. While we get the best prices for our early grapes along the lake shore we cannot get good prices for a large quantity of early grapes, and I would think that grapes from the southern part of the state might meet that difficulty. You might get good prices for a few grapes but when you come to raising them in large quantities, especially if you have a peach year, grapes in our market do not stand any show at all by the side of good peaches,

and they are sold at what we can get for them. That is an important point and I think that planters in the south should keep that in mind and not make a mistake in planting too many.

Mr. Albaugh: In the south we planted about 30,000 grape vines to get into market before the other "bugger" and we found that when the grapes are not half grown on the lakes we could begin to put our crops into Buffalo, Cleveland and Toledo, and we didn't get freight for them. No more grapes on the southern peach lands, I can tell you. There is a limit to the amount of grapes that can be consumed, but there seems to be no limit to the amount of peaches that can be consumed.

Mr. Olmer: Mr. Albaugh might have given the reason why they didn't bring the money. It is because when they get up into the northern market ready for sale they are so very apt to shake off the stem. That has been the trouble this last year. I was in a vineyard of eighty acres in the southern part of Georgia. It was then July 6th, and they were packing and shipping grapes north in large quantities, and afterwards I wrote to Mr. Tipton to give me the names of the varieties that he planted and what they realized. They realized from five to seven cents a pound, but since then they have not made any money. That was three years ago, and they gave as a reason that those grapes grown down there shake from the stem and are not salable in this country.

Mr. Longenecker: It is probably hardly proper to discuss my own paper. But we have a wide expanse of latitude in which grapes do not do well and it gives us quite a margin between our and their markets. Again, too many of the early grapes put upon the market heretofore were not thoroughly ripened. It is a well known fact that if the Concord is put upon the market when it is simply colored people will refuse to buy it, but put the Worden on the market and there will always be a good price received for them. I doubt whether anyone has ever put any well ripened Wordens upon the market in this region of the country and not received remunerative prices for them, and I wonder if the low prices received for the grapes along the lakes are not for grapes that are not thoroughly ripened?

Mr. Woodard: I think perhaps I can answer the question of Mr. Longenecker as to whether the low prices received for grapes along the lakes are due to the grapes not being thoroughly ripened. That is not the case, as some grapes with us that brought the lowest prices were thoroughly ripe. There were other conditions that brought them down. For my part I should go a little slow about planting many acres of vineyard in the future.

Mr. Longenecker: That is one caution I laid down in the paper I read.

Mr. Woodard: Suppose that every fruit grower in southern Ohio should plant from one to two acres, where would the market in southern Ohio be?

Mr. Albaugh: At the January meeting at Macon, Georgia, that same Mr. Tipton, who manages a large peach orchard of seventy acres, we asked what his profits were upon his grape crop and he answered in a very small word of three letters "nit", nothing. He didn't get freight for them.

President Cushman: It has been suggested that we take up some of the questions at the last of the program. The first one is: Is it practical or advisable to sell fruit by weight?

We have discussed that somewhat at other meetings, but perhaps there may be some new light upon it, and I will ask Mr. Miller to open the discussion.

Mr. Miller: In our peach section several years ago we found that several men had planned to make their baskets smaller and so we got together and fixed the weight of a bushel of peaches and it has had a great effect in increasing the size of the baskets so that they will hold a bushel if they are well rounded.

A Member: What is the weight?

Mr. Miller: Forty-eight pounds. The fruit companies in our sections say that the baskets have the full weight.

Professor Green: I want to ask Mr. Miller if they vary as much as apples? I have weighed a bushel of apples and find that they vary as much as ten pounds, for instance the Ben Davis. It is practicable to sell apples that way.

Mr. Miller: There is considerable variation in peaches but not so much as in apples.

Mr. Albaugh: It is the fashion to weigh things in California. Fruits vary a great deal in weight. The heaviest and lightest will vary ten pounds. Whether they will do it in other varieties or crops I do not know, but I think it will be a long while before it will be the fashion to weigh fruits in this country. If it is really an advantage and if it is an improvement, all these things move slowly. It will be a long while before we will weigh green fruits in this country.

Professor Lazenby: Last summer I spent a little time in the fruit section of Western Colorado and there they sold fruit uniformly by weight, even the small fruits, strawberries, raspberries, garden vegetables and everything was sold by weight. I inquired about it and the growers thought that it was much more satisfactory than measuring. I might state that we find in our market as far as regards some of the greenhouse crops that we can sell either way, by weight or by measure. In some markets in Columbus some dealers buy lettuce by weight and some by measurement. I find there is a tendency on the part of some growers if they sell by number of plants they will crowd their plants a little and they will not be quite so heavy, and if they are selling by weight they will not pack them quite so closely.

Secretary Farnsworth: I realize there are a great many difficulties

in the way of this plan, but I believe it is worth trying to overcome them. In our Toledo market our vegetables are sold almost entirely by weight. The fruit is sold by measure and as measuring is a very uncertain question, it depends a good deal upon the honesty of the producer as to what that measure shall be, and selling by weight would do away with this. Now, I was talking with one of our commission men about this same matter and one remark that he made was something that perhaps we do not always think about. He said, "That would do away with the hucksters," because he said the hucksters can sell at the same price per bushel that they buy at, simply by cheating in measurement. It would be the easiest way in a good many respects. Of course there are disadvantages in strawberries in quart baskets. The only way we could do would be to estimate and after weighing a crate or two we could tell how full they would have to be made to make legal weight. The plan is in embryo, but I believe the principle is correct. It is desirable; it may not be practicable in all cases, and yet I believe it would be well for us to use what influence we have to work in that direction.

Mr. Freeman: I believe that there are twelve states in the union that sell apples at a standard of fifty pounds to the bushel. I see commercial men quote them in that form. If a man is selling apples and after he has put them away they should shrink ten or fifteen pounds to the bushel he should lose that, because the flavor is gone. It does seem to me that in my judgment it would be the best way to sell fruit by weight.

Mr. Woodard: It will do for us who are visiting in Dayton to tell our experience. A dealer in potatoes and apples told me this morning that at one time his was the only place in which a certain product could be obtained and that the hucksters went to his place and bought the product and go about the streets of Dayton retailing it out to the consumers and that they were making \$1.25 a day.

Mr. Pierce: I do not think that the schemes are all connected with the measuring of the fruit. They sell a great deal of wood in grape and plum baskets. I have found that in these baskets there is a difference in the weight. I found that some of the bottoms were a half inch thick and were made of heavy, knotty, green lumber. I understand that they sell them by weight. I know certain persons will not take their baskets until just before time to begin picking so they can have the green baskets.

Mr. Whitney: The cider mills of northeastern Ohio have bought apples by weight, fifty pounds to the bushel and will buy no other way. As to the grapes that Mr. Pierce spoke of, I do not know whether it would make any difference because up our way they are bought and retailed by the basket. We take a basket and take our chances. There may be nine or there may be eight pounds.

Mr. Miller: I have found that in western New York all the apples, no matter what their quality, were bought by weight.

Mr. Pierce: In regard to the grapes they are sold in the Akron

market, nine and ten pounds to the basket and if you dispute the measure they set them on the scales and weigh them.

The President: The method of sizing up what you buy in the grape business has changed since I can remember. When we first began to ship grapes to Cincinnati when our returns were made they were made on so many pounds of grapes, and now all go by the basket. The different shipping associations in our neighborhood have agreed on a nine-pound basket and that ought to be what the basket of grapes should contain and they follow the practice of weighing quite largely. In my own packing nearly all of our grapes where help is employed go over the scales in a packing house, and then they go to the shipping station and the association that they are assigned to have you drive on the scales again, and when the returns come it is for so many baskets of such and such variety of grapes and not so many pounds. I think this is the best way. It is easier to dispose of the grapes by the basket than by the pound. As to the different weights of baskets I believe our associations have agreed that baskets shall not weigh more than so much, I think it is twenty ounces.

Question: Is it beneficial to whitewash young fruit trees, and if so, when?

The Secretary: I have frequently done so and believe it to be a good thing. I do not do it now because I would have a good many to whitewash. My idea is that the whitewash affords a protection to the bark by reflecting the sun, especially when the trees are young and are not shaded. I am now practicing another method, wrapping burlap around the trunk.

Mr. Albaugh: We whitewash our peach trees in the south. It answers a very important purpose. Put carbolic acid in the whitewash and apply it to the tree it does very well. Mr. Moody was interested in some of our larger orchards there and urged us to whitewash our Kieffer pear orchards even into the limbs to keep the blight away.

Mr. Freeman: I have whitewashed my larger trees for the reason that I believe that it destroys the harbor of different insects that hide in under the bark.

Mr. Miller: A good many of the peach growers in our section make it a practice to whitewash every year, especially on Catawba island. They claim it is a great advantage to the tree in making the bark smooth.

Mr. Woodard: How is it applied?

Mr. Miller: With a broom. Prepare the whitewash, and put it into barrels on a mudboat and take it out of the barrels with buckets from both sides.

Question: Can you do it with spraying pumps?

Mr. Miller: I think so.

Professor Green: Another thing which is much more effective is lye or Bordeaux Mixture.

Mr. Albaugh: The Bordeaux Mixture is dearer.

Professor Green: Yes, and you can put it on quicker by spraying than any other way.

AFTERNOON SESSION.

The convention was called to order at two o'clock P. M., and the president announced that questions from the question box would be first disposed of.

Question: What are the best early potatoes for market gardeners to grow?

Mr. Tussing: I can answer it for myself, Mr. President, Early Ohio.

Mr. Freeman: I would suggest Lee's Favorite. Our soil is partly clay bottom land. The Early Ohio has been one of the best early potatoes we have had, but it seems there is a disease or scab that gets on them, and after growing it a few years it is not worth growing. You won't get more than two or three salable potatoes from a hill, whereas in the Lee's Favorite you get from six to eight.

Mr. Scarff: The Burpee's Extra Early is the best I have had anything to do with. I have a sandy loam.

The Secretary: We would like to know what kind of soil you have, Mr. Tussing.

Mr. Tussing: I haven't any potato soil. I have all my clay soil in small fruits and my other soil is black. I have never found a variety of potatoes that did well on the soil except a late potato. The vicinity is sandy or gravelly loam and the Early Ohio is raised altogether.

President Cushman: The Early Ohio seems to hold first place in the sandy garden land around Cleveland. I saw some beautiful Early Ohio potatoes grown this season.

Mr. Freeman: How would they do where they are irrigated in the black loam soil? There were some in my neighborhood that weighed two pounds.

President Cushman: I grew a few early potatoes last year, the first year I ever grew early potatoes in my life. I consulted Prof. Green for the best varieties for heavy soil and among them he mentioned the Early Northern, and I planted the Early Northern on rather sandy clay or clay loam and four or five other varieties. The Early Northern and New Queen did extremely well.

Mr. Tussing: I would like to have some information on what soil is best adapted to the quince.

Mr. Stoner: I have never had much experience in growing quinces. I have an orchard of seventy-five trees of the Champion and a few Orange. Orange quinces seem to do very well in our country around houses but

there has never been any experiment made in orchard growing. The Champion we think will grow better in orchards but the fruit is inferior to the Orange. The Champion seems to be adapted to almost any kind of soil.

Mr. Whitney: It ought to be clay soil.

Mr. Farnsworth: About six or seven miles from our place on the clay soil along the Maumee River quinces seem to flourish. It is rather a rich heavy clay soil.

Mr. Siebenthaler: I find that quinces do best in heavy clay soil. You don't want it hilly, and if it is a little too wet, underdrain it. Keep your soil dry and manure it well.

Mr. Flory: I would like to know what virtue there is in salt. We have heard that it is a fertilizer and I would like to know.

Mr. Ohmer: It keeps the ground moist. I made more money from quinces than I have upon any other kind of fruit that I have ever grown in proportion to the amount of land occupied.

Mr. Waid: The answer was given as the reason for the beneficial results of salt on quinces that it holds the moisture. Is that the only reason that we supply salt to the asparagus-bed?

Mr. L. B. Pierce: There have been numerous experiments made by the experiment station and large growers in salting asparagus and it has been proved over and over again that it does no good. There is no beneficial virtue in it.

President Cushman: There was one benefit ascribed to it. It does help to kill and keep the weeds down.

Mr. Whitney: I would like to inquire if anybody has had experience or can tell whether, if currants or gooseberries were heavily mulched with straw and the mulch were left on from year to year heavy enough to keep the weeds down, would it hurt the soil by making it wet or clammy or breed insects or anything of that kind so as to be injurious?

The Secretary: I believe, Mr. President, if it were thoroughly underdrained it would be all right, although it might form a hiding place for insects. But I am satisfied that unless it were thoroughly underdrained it would become too packed.

Mr. Freeman: The danger of keeping heavy mulch on year after year is that it induces the roots to grow near the top of the ground.

Mr. Stoner: I think it has been pretty clearly demonstrated by men who make careful experiments in that line that mulch when thorough enough will answer the purposes of cultivation. Where we grow fruit so largely I believe in the theory of mulching and I use the mulch on that class of fruit which is difficult to cultivate. I have no trouble with blackberries swaying over. I would have just as much faith in its use for currants and gooseberries were it not for the fact that they are readily cultivated. It is about as cheap to cultivate currants and gooseberries as it is to mulch them.

Question: What is the soil?

Mr. Whitney: It is clay loam, somewhat elevated.

Question: Good natural drainage?

Mr. Whitney: Yes, sir. And I want to explain further in regard to cultivation. My plants set several years ago have got so high that they are getting to be hard to cultivate. I do not know whether it is from the frosts but they have become so raised that there has got to be quite a ridge in the rows or the roots will be exposed. They could not be cultivated down to a level unless you take the plants out of the ground and for that reason it makes them difficult to cultivate.

Mr. Scarff: I think Mr. Whitney's greatest mistake was in planting his currants and gooseberries in soil not properly drained in the first place. I think that accounts for their being heaved up. Now that the plants are raised I would advice mulching, as that will hold the moisture better.

Mr. Whitney: I would ask whether that mulch ought to be renewed every year.

Mr. Scarff: I do not think it is necessary.

President Cushman: If there is nothing further we will call for the report on exhibits.

EXHIBITS.

J. A. Flory—Winter banana apple: A yellow apple resembling maiden's blush in appearance, flavor mild, sub-acid, with a peculiar flavor that suggests the name of the apple; a desirable dessert apple.

E. M. Buechley—Downing's winter maiden blush: This apple has been previously described by the society.

Isaac Freeman—Minkler: A very desirable apple in quality, resembling Vandevere in appearance; said to be very productive and reliable; late keeper.

Zoar: Round oblate, stem short, set in a deep cavity; calyx small, set in a deep basin; juicy, tender fleshed, sprightly flavor of the Smith's cider order. The specimen shown is two months past the season of the apple.

George Townsend—Winter King: A seedling apple, a little above medium size, conical, somewhat the shape of the Porter; color yellow, with a blush covering one side; faint striping in the blush; flesh crisp, tender; flavor a very mild, pleasant sub-acid. Originated in Carroll county, Ind.

W. B. Cherry, New Plymouth, Vinton county, O.—Apple No. 1: A seedling of Rome beauty, round, above medium size, thin stem, set in narrow shallow cavity, calyx, open set in a shallow basin; color resembles White Pippin; flesh crisp, tender; flavor mild, sub-acid. The specimens shown are past condition.

Seedling No. 2: An apple above medium size, round, conical, stem short, set in a broad cavity of medium depth; calyx, open set in a shallow basin; color yellow; skin rough with numerous small russet dots; fleckings of pink on stem end of apple; texture of apple coarse and firm; flavor sprightly, sub-acid. This apple resists the effects of bruising to a remarkable degree. Season, February to March.

Johnson Beatty—A very nice specimen of pewaukee.

J. C. Bear—Samples of York Imperial.

State University—Large samples of Grand Rapids lettuce and Cincinnati radishes.

Barlow & Son—Berry crate and baskets.

Grape basket by a manufacturer of Dayton.

THEO. F. LONGENECKER,

S. R. MOORE,

H. H. AULTFATHER.

On motion by Mr. Woodard the report of the committee on exhibits was adopted.

Mr. Ford: If it is in order I would like to ask a question in regard to this Winter Banana apple. It is being advertised extensively by a firm in Michigan as Winter Banana, and I see that in other places some nurserymen are calling it the Flory or Winter Banana. I would like to ask whether anyone knows whether they are the same apple or not?

Mr. Flory: I will say that the apples are one and the same, and I will endeavor to give a perfect history of it. It originated about twenty years ago near Logansport, Indiana, and was formally introduced by a man by the name of Flory, hence the name Flory attached to the apple, and Charles A. Green, of Rochester, New York, got some of the scions of the apple, and if I mistake not, the Phenix Nursery Co., of Bloomington, Illinois, got some of them and are putting them on to the market. That is all I know about it.

Mr. Ford: Is it a winter or fall apple?

Mr. Flory: It is a winter apple. Mr. Flory sent in a lot of them about three weeks ago and he is in the habit of selling the best specimens to the Logansport market. It will keep till April in good condition.

Secretary Farnsworth: I presume some of you remember the exhibit of that variety at the Canton meeting which I took there for Greening Brothers, of Michigan.

Mr. Whitney: I had the pleasure of tasting one of the apples. They said it had the flavor or suggested banana, but I failed to discover any odor or taste that suggested banana.

Mr. Flory: It is pretty hard to distinguish that flavor unless you have a perfect specimen. You cannot get the true flavor of these apples in the specimens I brought here because they are culls.

Mr. Longenecker: I would say that the flavor would suggest the name and to me it was very clear.

The President: We will now take up the regular afternoon program, and listen to the report of Professor Webster on the introduction and dissemination of insect pests.

REPORT ON THE INTRODUCTION AND DISSEMINATION OF INJURIOUS INSECTS.

By F. M. WEBSTER.

Just when the importation of destructive insects into this country began, it is impossible to say, but it was probably not long after the first settlements were established. In some cases it is a disputed question as to whether or not a species has been introduced and had diffused itself over the country at an early day, of whether it was indigenous, and as soon as the white man began to clear the forests and plow and plant, began its depredations upon his fruits and grains, and was with these sent back to the old country and there became established, and spread and thrived as at home. As an illustration, the Woolly Aphis of the apple, (*Schizoneura lanigera*), known in Europe and Australia as the American Blight, thereby implying its American origin, though whether justly or not it is now impossible to say. It was described from apple trees in Germany by Hausmann, in 1801, though it is claimed to have been known in this country as early as 1787, but French gardeners knew of it long prior to the latter date.

The Codlin Moth (*Carpocasca pomonella*), was certainly brought to this country from Europe, about the beginning of the present century. What this introduction has cost us, you can compute as well as I, but we both know that millions of dollars would not cover the losses it has caused.

Just about this time or a little later, perhaps, we got the Oystershell Bark louse (*Mytilaspis pomorum*), whose original home was also in Europe, and which is scattered over the country, not only attacking fruit trees, but some of our shade trees, like the elm and poplar.

The Apple Aphis (*Aphis mali*), came also from Europe, we know not when, but probably among the first trees or scions that were brought over from England by the earlier settlers. In its spread westward this has outstripped the Codlin Moth, as it occurs in British Columbia, where the moth has so far failed to secure a foothold, and strict quarantine laws are in force regarding its introduction.

The Peach Tree Lecanium (*L. persicæ*), Modeer, has also come to us from across the Atlantic, and spread at least as far west as the Rocky mountains. Its habits were studied one hundred and fifty years ago in Europe, and, as the name implies, it attacks the peach. I have received it from several places in Ohio.

The Imported Currant-borer (*Ægeria tipuliformis*), and the Imported Currant worm (*Nematus ventricosus*), both working more or less injury, as you know, to the currant, and more particularly in case of the latter insect, which has only been with us since about 1858, are both of them of European origin; as also the Currant Plant Louse (*Aphis ribis*), which has long injured this fruit in that country.

The Imported Cabbage worm (*Pieris rapæ*), that was brought from England to Quebec, Canada, about 1860, from which locality it made its way via New England and New York to Ohio and westward, appearing in our state about 1873; the Cabbage Aphis (*A. brassicæ*), introduced as far back as 1791, and the Cabbage Curculio (*Ceutorhynchus rapæ*), which I have found destructive to young cabbage in Ohio during the last year, and which occurs over northern and middle Europe, are the three enemies of the cabbage for which we are indebted to England and Europe, all being introduced species.

The Asparagus Beetle (*Crioceris asparagi*), thought to have originally come from Russia, but now common nearly all over Europe, was introduced into

America probably between 1855 and 1860, and has now reached Ohio, being found in the northeastern portion of the state as far west as Cleveland.

The Fruit Bark beetle (*Scolytus rugulosus*), which occurs nearly all over Europe, and was first discovered in this country at Elmira New York, in 1877, but has now spread far to the westward, is exceedingly abundant in Ohio, and I have probably received more inquiries regarding it during the last year or so, than any other insect.

The Clover Root-borer (*Hylesinus trifolii*), is allied to the preceding and a serious pest of our clover fields. It is also from middle and southern Europe, as is the Clover Leaf weevil (*Phytonomus punctatus*), brought over many years ago, but found also in Asia and North Africa. Both of these insects now cover Ohio pretty generally, the former seriously injuring clover in many localities.

The Wheat Midge (*Diplosis tritici*), was known in England long before it appeared in this country, and it was probably introduced into Canada, from whence it spread into New England and westward. The damage this one insect caused in Ohio between 1854 and 1858 would amount to many millions of dollars, as wheat growing was of necessity almost suspended in some localities. During one year alone, in New York, the damage caused by it was estimated on good authority at fifteen million dollars. Whether or not the Hessian Fly (*Cecidomyia destructor*), came from Europe or not is still an unsettled point, but we did get about that time a most terrible pest to stored grain, the Grain Moth (*Sitotroga cerealea*), which ravaged the wheat fields and granaries of France one hundred and sixty years ago. Ohio has, I think, suffered little from the pest and then only in the extreme southern portion, but the damage in the Southern States has been fearful. Still another pest of the miller is the so-called Mediterranean Flour Moth (*Ephestia kuhniella*), which for a number of years had been doing much injury in the flouring mills of Belgium, Germany and England, was found in a mill in Canada, and is now known to occur also in Pennsylvania, New York and California. This is a comparatively recent importation, having been observed in America for the first time in 1880, and I have never received it from Ohio, though, as you see, it is on all sides of us and liable to come to the front at any time. Another troublesome pest of the miller is what is erroneously called the Flour Weevil (*Tribolium confusum*), and which is not a weevil at all, but a blood relation of the Meal Worm (*Tenebrio molitor*), a household pest, and also an introduced species, coming to us from Europe. The Flour Weevil must be a comparatively recent introduction, but is causing Ohio millers some trouble, as it has and is doing in France, Germany and Italy.

I have not yet mentioned the San Jose scale (*Aspidiosus perniciosus*), but you are all familiar with its spread in the United States, and I will only say that we seem to be in a fair way of settling its nativity. There are some grounds, now, for thinking that it came from Japan, possibly having been introduced on the Japan plum.

The Horn Fly (*Hæmatobia serrata*), a native of Southern France, was probably imported with cattle about the year 1886, and has spread from the Atlantic coast to far beyond the Mississippi, not killing farm animals it is true, but causing immense losses in shrinkage of fat and milk production.

The Elm Leaf-beetle (*Galerucella luteola*), a well-known pest of the elm in France, Germany and Austria, was introduced into the eastern portion of the country probably about 1873, and has been causing no end of trouble to those who had charge of parks and public grounds, as well as individuals who had planted English elms along their walks and on their lawns. This has been gradually working both north and south along the country between the Allegheny and Blue Ridge mountains and the sea coast. But within the last two weeks our wide-awake United States entomologist, Mr. L. O. Howard, has informed me of its

presence in West Virginia, just across the Ohio river, and if it is not already in our state it will certainly be among us next summer, and I shall not be in the least surprised to hear of its appearance in the parks and on the streets of Cincinnati, Columbus, Cleveland and Toledo. The Willow and Cottonwood Beetle (*Melasoma scripta*), from Europe also, is causing much trouble among those who are growing the basket willow, as well as the care takers of our cemeteries, where the willow is much used as an ornamental tree.

Even our homes are not exempt from invasions of introduced insects. The Carpet Beetle or Buffalo Bug (*Anthrenus scrophulariæ*), is an European insect, though not there destructive to carpets, because of these being largely displaced by rugs; the three Clothes Moths (*Tinea pellionella*, *Tinea tapetzella* and *Tinea biselliella*), are every one of them of foreign origin. The Silver-fish insect (*Lepisma saccharina*), though possibly more of a museum than a household pest, is nevertheless very destructive to books, pictures, wallpaper and even fabrics that have been starched. It was known in England at least as early as 1665, while that bloodthirsty fiend of the night, the Bed Bug (*Climex lectularius*), was known in the same country as early as 1503. As it was also known to the Romans, I shall not attempt to solve the problem as to whether it was introduced into America by an Englishman, a Dutchman, a Frenchman or a Spaniard, but it occurs in Ohio, *I think*.

Now, here are thirty introduced insects, every one of them a pest, and every one among the worst of this sort. There are very few native species that are as destructive as these, and had I chosen to have included those of lesser note, I might easily have doubled the number, I am sure. These insects have, since their introduction, cost us millions of dollars, and when I apply the word cost I do not mean to include the expense of manufacturing insecticides or the appliances for using these, or, indeed, the application of them, for these not only build up industries, but afford employment for both men and women, and so cannot be counted as losses. But the fruits of our farms, orchards and gardens that are destroyed are losses, wholly and absolutely so. But I have not finished my list.

There are a number of introduced species that have gained a foothold along our coasts, that have not yet reached Ohio, but are headed this way.

The Pear Midge (*Diplosis pyrivora* plate 1, figs 1, 2, 3), was introduced into this country in 1877, by the Messrs. Coe Brothers, of Meriden, Connecticut, in a consignment of pear stocks from France. As no good description of the insect was to be found in Europe, by request of European entomologists, Prof. Riley re-described and renamed the species in America. The insect is allied to the Wheat Midge, previously mentioned, and is a very serious enemy of the fruit of the pear, the young pears being rendered worthless. The late Prof. Riley, at the time United States entomologist, made every effort to have the pest exterminated before it had spread to adjoining orchards, but only a couple of weak ineffectual attempts were made to do so by individual efforts, and as a consequence it is now spreading out over New York to the west and northward. A few hundred dollars would have eradicated it at first, but now it is likely to cost the fruit growers millions and still be on the spread.

A more recent introduction from Europe is the Sinuate Pear-borer (*Agrilus sinatus*, figs. 1, 2, plate 2, and figs. 1, 2, plate 3), whose habitat is Germany, France, Middle Europe, and since 1894 it has been known to be established in New Jersey, probably having been introduced in pear stocks within the last ten years. The area over which this insect at present occurs is very limited, and Prof. Smith, entomologist of the New Jersey experiment station, stated last summer that with \$5,000 and a law granting right of entry only, he would agree to exterminate the pest. Ten years hence, you can multiply this sum by one hundred, and yet

neither be able to repay the losses it will have caused, or prevent its ravages in future. It will not be exterminated.

The Wood-Leopard Moth (*Zeuzera pyrina*, plate 2, fig. 3), it is thought, was first brought to this country in a cargo of timber, about 1880. The work of its larva or caterpillar was first noticed in Central Park, New York City, by the entomologist of public parks, in 1881. It is a native of Europe, and is spreading out from its original starting point, attacking many kinds of ornamental and shade trees as well as nearly all of our fruit trees. It is not only likely to spread, but cause no end of trouble in nurseries by attacking young trees and rendering them worthless, as it may completely girdle branches or even the main, vertical portion of the top, in smaller trees.

The twelve-spotted Asparagus Beetle (*Crioceris twelve-punctatus*), a second enemy of asparagus, like its congener, a native of Europe, where it appears to be widely distributed, appeared in the vicinity of Baltimore, Maryland, several years ago, and was making its way slowly to the north and westward.

The Wheat-stem Saw Fly (*Cephus pygmaeus*), known to occur in France since 1764, and known to inhabit also England, Spain, Holland, Switzerland, Tyrol, Italy, Germany, Hungary, Russia, Sweden, Circassia and Syria. It was first observed in New York in 1887, and in Canada the same year. It eats off the straw in the fields while the grain is standing. I do not know that it has yet reached Ohio, but I am confidently expecting it to do so at any time, especially in the extreme northeastern section.

Now, these are such as are conspicuous, and we know of their occurrence, but this does not include those of lesser importance; besides there is every reason to suppose that introductions are continually being made, and, hence, there are more than likely others of whose presence we are as yet ignorant. Nor is my report yet complete, as there are other species coming to us from still another quarter, viz, from the South.

The Harlequin Cabbage Bug (*Murgantia histrionica*), is a Mexican species, occurring throughout Central America and the West Indies. It has been about thirty years in coming from southern Texas to southern Ohio, but it is now established all along the Ohio river from Athens county to Cincinnati, and bound to make trouble wherever it goes. The Bag Worm (*Thyridopteryx ephemerae-formis*), is a southern insect, and has until recently been keeping well to the southern part of the state, Dayton being about its most northern point of occurrence, but only within a few weeks I have received it from within twenty-five miles of Toledo. I have lately collected evidence enough to almost prove that the ancient home of the Chinch Bug (*Blissus leucopterus*), was Central or possibly South America. I am convinced that the Striped Cucumber Beetle (*Diabrotica vittata*), and the Western Corn Root-worm (*Diabrotica longicornis*), were both of them formerly Mexican insects. Only within a few years, a new pest of cotton, the Cotton Ball Weevil (*Anthonomus grandis*), has crossed the Rio Grande river and begun its work in Texas. Now, as a matter of fact the Southern States will suffer most from insects coming from this quarter, but who can say where any of them will stop in their northern spread? If we are to make this a national question, we must join hands with our Southern neighbors, and pull together for national recognition of the importance of the matter. I append herewith, a copy of some resolutions recently adopted by the council of the experiment station of New Mexico, which, though not exactly fitting our case, come directly within the line of this report.

Copy of resolutions concerning the introduction of injurious insects from the South, drawn up by the entomologist of the New Mexico agricultural experiment station and adopted by the council of said station January 9, 1896:

Resolved, That great injury has already been done to the agricultural and

horticultural interests of the Southern States by the introduction of injurious insects, as witness the various scale insects on *citrus* trees in Florida and Louisiana and cotton weevil in Texas.

2. That it is well known through recent investigations in the West Indies and Central America, that numerous scale insects and other pests exist in the countries to the south of us, but have not yet reached the United States. Thus, for example the *aspidiotus scutiformis* on citrus trees in Mexico, the *A. articulatus* on citrus trees and many other plants in the West Indies, the *A. personatus* on numerous plants in the West Indies, etc., etc.

3 That past experience shows that these Mexican and West Indian species are likely to be introduced into the United States, if no precautionary measures are taken; and that some of them, at least, may be found to flourish over a considerable portion of North America. Witness, for example, the West Indian *Diaspis amugdali* now injuring peach trees as far north as the City of Washington.

4. That the results obtained by the horticultural quarantine officer of California, show that it is possible to prevent by due vigilance, the introduction of numerous insect pests. Thus Mr. Craw has quite lately found on plants which were about to be landed at San Francisco, a number of species of scale insects foreign to this country, several of them undoubtedly quite pernicious.

5. That when the immense interests at stake are considered, the sum of money required to support a system of inspection and quarantine along the southern border of the United States appears quite insignificant. If but one serious pest were kept out of the country in a year, the saving would more than equal the cost.

6. That there should accordingly be appointed horticultural quarantine officers at Nogales, El Paso, Eagle Pass, Laredo, Galveston, New Orleans, Mobile and Key West.

7. That these officers should be empowered by the laws of their respective states and territories to examine all plants introduced through their several localities, and destroy all found to be infested by insects.

8. That when the quarantine officers have examined and passed a plant or collection of plants, they should issue a certificate to that effect to the importers, and that it should be made illegal to possess imported plants without such certificate.

9. That the quarantine officers should be appointed by the agricultural experiment stations of their several states and territories, and paid out of the funds of said states and territories, the necessary amount being appropriated to the agricultural experiment stations for that purpose.

10. That while much good could be accomplished as above, it is also very necessary to learn what injurious insects exist in all the regions to the south of us, so as to be warned of their probable advent in this country; and also to ascertain their natural distribution and life histories, parasites, etc., so as to be prepared to meet them intelligently should they cross our border, as they may do in spite of great vigilance.

11. That while observing with much satisfaction the recent temporary appointment of an agent by the Department of Agriculture to travel in Mexico and determine such points as the above, and freely acknowledging the importance of the results thus obtained, we cannot regard this as more than a beginning of an investigation which should at least occupy many years. Thus, for example, we are still ignorant of the injurious insects inhabiting the whole west coast of Mexico, south of Guaymas, of Yucatan, Guatemala, Honduras, Nicaragua, Costa Rica, etc., while at no locality did the agent of the department remain long enough to obtain more than a very superficial knowledge of the insects there existing.

12. That we therefore recommend the appointment of a permanent agent

who must be a skilled entomologist, well informed about scale insects, to travel in Mexico, Central America and the West Indies, and make collections of injurious insects and such observations as are above indicated.

13. That such agent should be appointed and paid by the Department of Agriculture and as an official of the division of entomology, to which he should report and transmit all his collections, the latter to be finally deposited in the United States National Museum.

14. That while thus in the service of the Department of Agriculture he should be instructed to co-operate with the several agricultural experiment stations, and advise the quarantine officers concerning their work, in the light of the experience gained by his reseaches.

The foregoing will show that we in Ohio are not alone in seeking some solution of the problem of insect introduction and dissemination, and though the interests of the different sections of the country differ to some degree, yet all are interested in the one prime object, viz, keeping these foreign pests out of the country, as far as possible, and learning of the fact of their having gained a foothold where this condition shall exist, and promptly exterminating them as soon as their presence is known. States, individually, will do little or nothing, either for themselves or each other. It seems to me that what is wanted is United States laws, enforced by United States authority and by United States officers, who know no such things as state lines, and no difference between the people of New Mexico and Maine, or between those of Ohio and California, but who will faithfully perform their duty anywhere and everywhere, when called upon to do so, and state laws may answer until we can secure these. We are told that we do not need more laws, and that we have too many already, but I say to you that this is not the case. We have too many people who have no regard for state laws, and who are allowed to look upon them as something in the nature of farces, and transgress them at will. The horticultural interests of the country are increasing rapidly, but we are losing millions of dollars by reason of these introduced insects, whose natural enemies are left at home, and for this reason are more destructive here than when in their native countries.

EXPLANATION OF PLATES.

PLATE I.

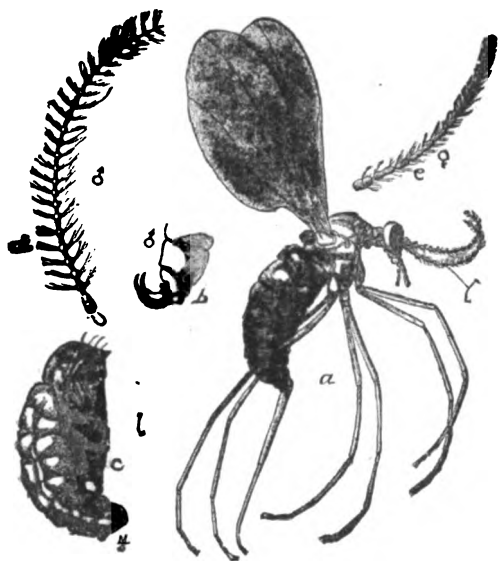


FIG. 1.

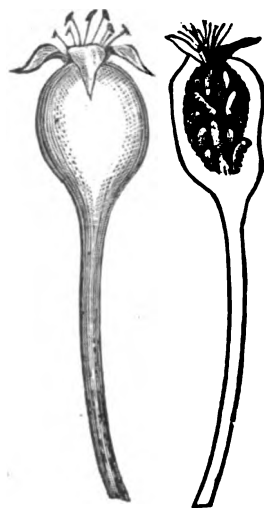


FIG. 2.

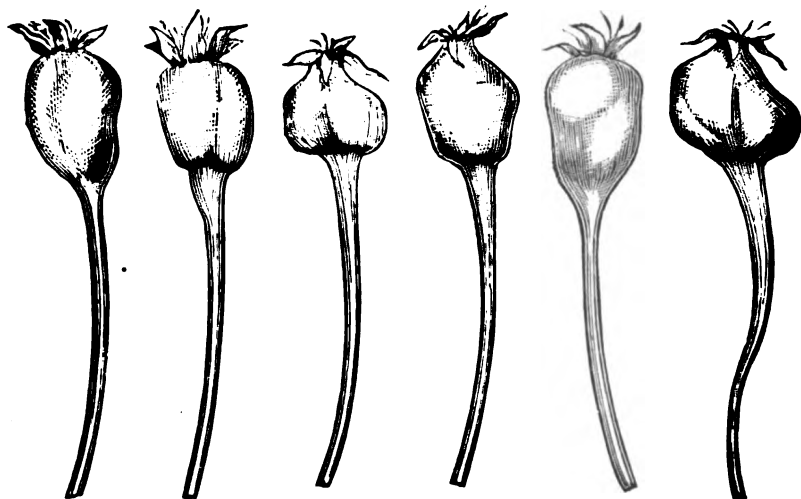


FIG. 3.

Fig. 1. The Pear Midge (*Diplosis pyrivora*) Riley: *a*) Female, side view; *b*) genitalia of male, from side; *c*) pupa—all much enlarged; *d*) antenna of male; *e*) antenna of female, still more enlarged.—After Lintner.

Fig. 2. Section of young pear containing larvæ, and a healthy pear for comparison.—After Lintner.

Fig. 3. Young pears deformed by Pear Midge. Natural size.—After Lintner.

PLATE II.

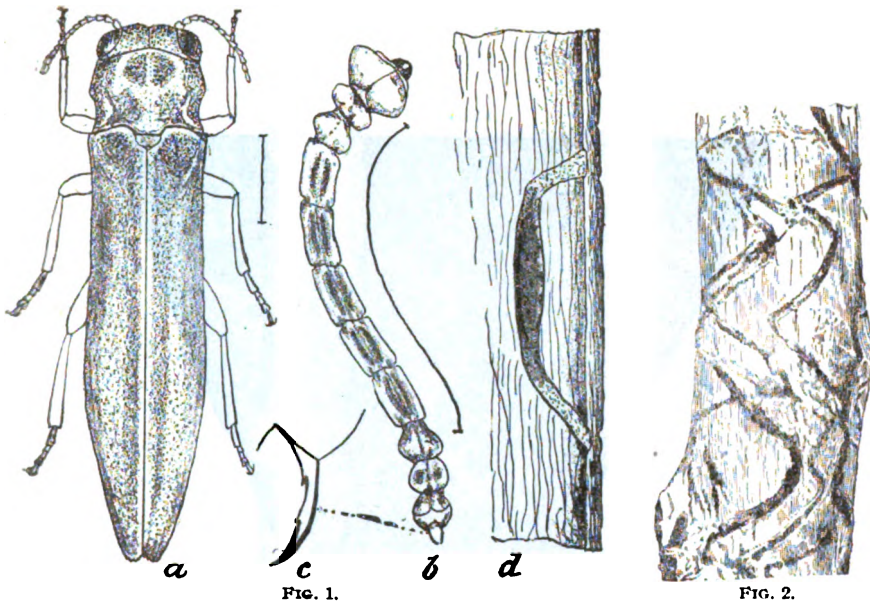


FIG. 1.

FIG. 2.

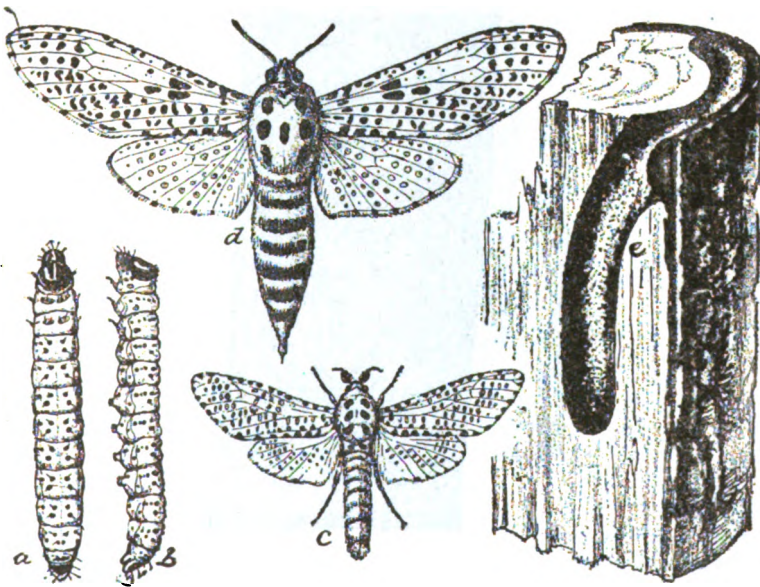


FIG. 3.

Fig. 1. The Sinuate Pear Borer (*Agrilus sinuatus*), Oliv.: a) Adult; b) larva; c) anal fork of larva; d) pupal cell in solid wood—all enlarged.—After Smith.

Fig. 2. Galleries of borer in trunk of young tree Natural size.—After Smith.

Fig. 3. The Leopard Moth (*Zeuzera pyrina*), Linn.: a) Larva, dorsal view; b) larva, side view; c) male moth; d) female moth; e) larval burrow. Natural size.—After Riley and Howard.

PLATE III.

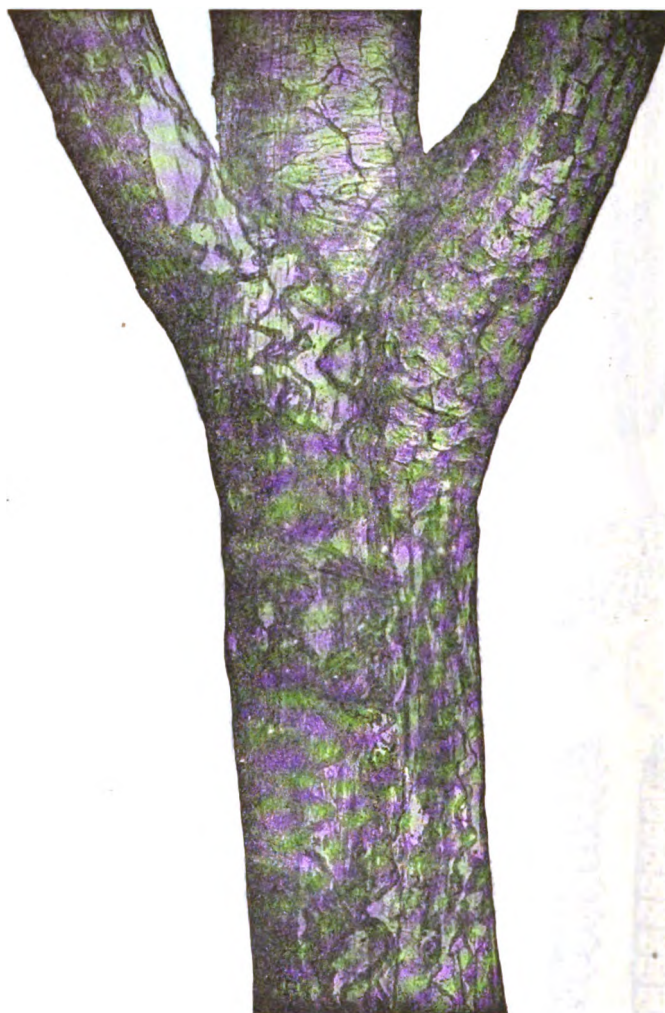


FIG. 1.

Fig. 1. The Sinuate Pear Borer; Seckel pear tree at point of branching; bark removed to show burrows of the larvæ. About one-fourth natural size.—After Smith.



FIG. 2.

Fig. 2. Gallery made by larvæ in nursery tree; *a*) point at which stock was budded, just above the surface; *b*) the down burrow, turning just above root system and coming up at *c*) at the larvæ working upward until full grown. A little enlarged.—After Smith.

Dr. O. W. Aldrich was here introduced and addressed the association upon the subject of proper future legislation pertaining to the introduction and diffusion of insects, as follows:

ADDRESS BY DR. O. W. ALDRICH.

I do not know why I should have been called upon to recommend suitable legislation for the purpose of preventing the introduction or spread of insect pests, because there would be many others perhaps who would be better qualified to suggest methods of legislation in its practical details than I, and I could only assume that it would be because it might become a matter of the power of either the state legislature or of congress which the society might seek light upon and that therefore I would be rather expected to speak from the legal standpoint than from the standpoint of the practical horticulturist.

As I listened to the paper by Prof. Webster it seemed to me that the practical difficulties in the way of legislation which should prevent the introduction of injurious insects in the various departments of industry would be almost insurmountable, and that it would be a matter of the very greatest difficulty to suggest legislation that would have this effect. So far as the prevention of the introduction is concerned of insects that really attach themselves to plants and injure them in that way, perhaps it might not be so difficult. And then upon this point perhaps it might be well to suggest to you what authority the legislatures of the various states may have in this line, in the first place to prevent the introduction of new pests from foreign countries or from one state to another, and then what legislation would have to come from the congress of the United States in order to be effectual and constitutional.

All of you are undoubtedly familiar with the fact that all things which affect foreign commerce or commerce between the states are within the sole jurisdiction of congress, and that is equally true, although it may be upon a subject upon which congress has not seen fit to legislate up to the present time. There are some things which congress may do, but when congress has not covered the subject of legislation the states may legislate upon these matters. One has been decided by the supreme court of the United States in a case involving the constitutionality of a law of the State of Missouri. But while it is true that congress has the sole jurisdiction to legislate in regard to matters of foreign and interstate commerce, it is a recognized principle that the legislatures of the various states have what is called the police powers, the power to protect persons and the property of their own citizens from the introduction of noxious or dangerous things. In other words, they would have the right to quarantine against contagious diseases whether of animals or of plants or of human beings, and to provide that no person should be permitted to enter into the state who was suffering from any of these diseases, but they have not the right, according to the decision of the supreme court of the United States to say that because certain diseases or insects are prevalent in a certain locality that all intercourse shall be suspended between that locality and the state. This case, where this question came up upon indictment, was one against a railroad company for introducing diseased cattle into the State of Missouri in violation of a law which expressly provided that during certain months of the year no cattle should be driven from Texas, or the Indian territory on the south into or through the State of Missouri, and also providing that if they were even taken through the state and any loss resulted that it should be *prima facie* evidence of the fact that they were infected with that disease and that they should be responsible for all damage done, and also in criminal proceedings the railroad company was found guilty in the lower courts of violating this law,

and after taking it to the supreme court of the United States a discussion occurred as to how far these two powers were in opposition to each other. And while the supreme court of the United States admitted the fact that the legislatures of the various states had this power of protection under the police powers of the state, yet it must be strictly limited to the prevention of the introduction of the articles that were then known to be infected, that they had not a right to build a Chinese wall, in other words, but they would have the right to provide proper methods of inspection and that any animal might be inspected at the border of the state and if it was found that they were suffering from a disease, that they might be prevented from entering into the state.

Now, this would give us what the state might do in regard to the prevention of the introduction of these pests upon stock that was being introduced, diseased plants in nursery stock that were being brought into the state, whether from foreign countries or from another state. Now, there might be a provision that where any common carrier came into the state, or at the first station upon any railroad that the cars should be stopped and the nursery stock inspected, and if it was infected by any injurious insect which could be destroyed, unless it was past all treatment, to destroy the insect. That might be done, but one can very readily see that in practice a thing of that kind would be almost an impossibility in a state like Ohio.

There might possibly be another method by which it could be reached, providing there were no effort on the part of commissioners to inspect, and it might be like this: Whenever a package was introduced into a state, say from a foreign country, that the owner of that package upon receiving it should be required to take it before the proper authorities and open it there and have it inspected, and if he was an agent bringing in goods, that the goods should all be inspected before it was distributed. If it was a person importing the stock for his own use, that he should submit it for inspection before being permitted to plant it on his own ground. I am giving you an idea of what can be done and you would be expected to judge of the practical value of the suggestion in regard to introduction from foreign countries.

There are some points that are made in the results that were read by Professor Webster that would seem to me almost absolutely essential to prevent the introduction of injurious insects from those localities where the countries are so well settled up that disease and injurious insects would be known to the people themselves, and that in other countries, such as Europe, where of course the scientists would be supposed to know whatever was going on in the matter, it should be one of the duties of the American consuls to make inquiry in regard to matters of that character and to make their reports through the proper channels of the Department of Agriculture, who should collate them, and whenever any new pest that was not known in the United States had been discovered in any foreign country that the secretary of the interior or secretary of agriculture, or whatever authority might be delegated with the power, should issue a proclamation forbidding any importation of any stock from that locality. This could only be done by an inspection system by act of congress. The states could not prohibit it. It would require an act of congress authorizing the proper authorities to issue a proclamation of that kind. If it was desired to prevent the spread or dissemination of injurious insects that obtained in certain parts of the country and that could be disseminated only by carrying trees or plants to other parts of the country, congress might do something there, but that should be put into the hands of the several experiment stations of the various states to make proper inquiries, and when injurious insects had been found to be introduced into a small portion of a state or the whole of a state, congress, while it could not pass a law to prohibit the passing of the stock through the state under the constitution, could quarantine

all other states against introduction or transportation of anything in which that pest would breed into another state, and thus virtually compel the parties for their own protection to know that their stock was free from the pest and that it was necessary to prevent its dissemination. They would be prevented from getting a market anywhere else until they did that. That might seem hard on the nursery-men, but it seems to be almost the only remedy unless the state itself would take it up and provide for the destruction of the stock that was infested.

Of course to prevent the dissemination of pests of this kind that are spread only by carrying the stock itself, is a matter of little difficulty, but where the animals themselves have the power of locomotion and may proceed from one point to another, it would be a much more difficult matter for legislation to check their progress. It would be necessary to provide laws similar to those of Michigan attempting to provide for the extinction of those pests by spraying, but it would be difficult to prevent the Codling moth from crossing the state line either by state or national legislation.

In regard to the dissemination throughout the state the state authorities would have ample power and jurisdiction to prevent the transfer or removal of stock from one county or township or locality to another by prohibiting it and making it a penal offense. Or they might make it a penal offense for any nurseryman to sell stock that was thus infested and provide that the law might be general or special in character, aimed at particular insects known at the time when the law was passed to be injurious, or a provision might be enacted much broader than that, providing that when any insect was known to prevail in any part of the state that was recognized by the scientists as injurious, that it should be a penal offense for any person to sell or transport from one locality to another insects of that kind, compelling them to see before selling to another that it was free from these injurious insects.

In regard to the eradication of the diseases or insects that are already located or have already reached the state, some act similar to our black knot act and yellows act with some few amendments that may be suggested by another committee, would seem to be adequate if the people in each locality would take hold of the matter and enforce the act. From an examination of the black knot and yellows law, that can be amended or modified so as to cover cases of the scale insect or other insects of that character that would be disseminated only by the removal of the stock and where it would be known that the only method of destroying insects would be by the destruction of the tree itself, a provision for its destruction could be made. I think that our present law can be so modified as to cover that class of cases in our own state.

Not having had by any means as much experience as many of the other members of the society in regard to the insects, I would not venture to suggest matters that would come more in the line of practical men than I am myself.

REPORT ON BEST LEGISLATION REGARDING THE INTRODUCTION AND SPREAD OF WEEDS, INSECTS AND FUNGI.

BY PROF. WILLIAM R. LAZENBY.

Within the past ten or fifteen years the introduction and spread of injurious weeds, insects and fungi have received a large amount of public attention, and laws aimed at prevention and extermination are being more and more frequently enacted.

Although these laws are intended to be salutary regulations, many of them have proved worse than useless. Few of them have been enforced and quite a number have been pronounced unconstitutional.

Laws passed for the benefit of horticulture should answer, as far as possible, the following conditions:

First—They should be simple, concise and easily understood. Any writing intended to be read and interpreted by the whole people should be expressed in terms familiar to all. This is particularly true of so important a document as a weed, insect or fungus law, which may affect the insects of every land owner.

Second—They should be of easy enforcement. If it costs more to enforce a law than the resulting effect is worth, the law is not practical and will do little or no good.

Third—They must be constitutional. People will refuse to comply with a law if its constitutionality is questioned. The law in some states tells just *how* and *when* to spray or otherwise treat crops, orchards, etc., and inflicts a penalty if the law is not complied with. This is unreasonable, and such laws have been pronounced unconstitutional.

The following abstracts will serve to illustrate the general character of the laws regarding weeds, insects and fungi that are now upon the statute books. Many of our states have weed laws, and in them one or more weeds are mentioned by their common names. One of the statutes of Ohio mentions the Canada thistle, white daisy, yellow daisy, wild carrot and teasel. Another provides for the cutting of briars, bushes, etc., along the fences of adjacent land owners. Two sections of the first mentioned law are as follows:

"Whoever knowingly vends any grass or other seed, in or among which there is any of the Canada thistle, white or yellow daisy, or wild carrot, and whoever being the owner, occupier, or possessor of any land, suffers any Canada thistle, teasels or wild carrots to grow and ripen seed thereon, or on the highway adjoining the same, shall be fined twenty dollars.

The trustees of any township, when notified in writing that any Canada thistles, teasels or wild carrots are about to go to seed on any land within their township, shall cause the same to be destroyed in time to prevent the seed from spreading, and shall return in writing to the board of county commissioners of their county, with their bill of expenses and charges therefor, which bill shall be paid from the county fund, the same having been first audited and allowed by the board, at the rate of compensation allowed by law to trustees for ordinary services, and the amount so paid shall be entered upon the duplicate against the land upon which the thistles, teasels or wild carrots were destroyed, and collected the same as other taxes, and returned to the county fund; but the owner, lessee, or agent of any land upon which Canada thistles, teasels or wild carrots are about going to seed, shall be first notified in writing by some persons interested, at least five days previous to the cutting thereof by the trustees."

The sections which follow give the principal points of the Wisconsin weed law, approved April 3, 1885. One great objection to this law is that the scientific names of the weeds are not used.

The common names here used have an uncertain meaning and are applied to different plants in different localities. The use of these common and often mere local names produces confusion. It is said that the true snap-dragon is never a weed in Wisconsin, and that some other plant is meant. All of this obscurity and confusion might have been avoided by appending the scientific names.

Section 1. Every person and corporation shall destroy upon all lands which he or they shall occupy or control, all weeds known as Canadian thistles, burdock, teasel, white daisy and snap dragon at such time and in such manner as shall effectually prevent them bearing seed. In like manner shall he or they also destroy any of the above mentioned weeds standing or growing as far as the center of public highways, lanes or alleys adjoining the lands owned or controlled by him or them.

Section 2. If the occupant of any such lands shall fail to destroy such weeds, as so required, after having six days' notice in writing by the commissioner of Canadian thistles, such occupant shall be fined five dollars for the first offense, and ten dollars for each offense thereafter.

Section 3. There shall be appointed by the town supervisors of each town or by the city council of any city, as the case may be, some competent person styled "commissioner on Canada thistles," who shall be required to take the same oath as town officers, and shall hold his office for one year and until his successor is appointed and qualified. The board may for any good cause remove said commissioner and appoint a successor to serve during the unexpired term.

The following statute was passed April 13, 1893:

Be it enacted by the General Assembly of the State of Ohio, That the supervisor of any road district in this state, or the street commissioner of any city or incorporated village, when notified in writing by any person that any plum or cherry trees within his district are afflicted with the disease known as the "black-knot," or that any peach trees are affected with either of the diseases known as peach yellows or peach rosettes, shall cause the said tree to be cut down and burned, or, where practicable, the diseased branches of the same to be destroyed each year, so as to prevent the spread of said disease; and make return in writing to the board of county commissioners of his county, with his bill of expenses and charges therefor, which bill shall be paid from the county fund, the same having first been audited and allowed by the board at the rate of compensation allowed by law for road work; and the amount so paid shall be entered upon the duplicate against land on which the said trees or diseased branches were so removed and destroyed, and collected the same as other taxes, and returned to the county fund; but the owner, lessee or agent of any land upon which such trees so diseased are situated, shall be first notified by some person interested, at least five days previous to the entering thereon by the supervisor.

Perhaps no state in the Union has done more in the way of legislating against insect enemies and plant diseases than California. An act looking toward this end was approved as early as March 14, 1881. This law has been amended several times.

Section 1 is substantially as follows: "Whenever a petition is presented to the board of supervisors of any county and signed by twenty-five or more persons who are resident freeholders and possessors of an orchard or both, stating that certain or all orchards or nurseries or trees of any variety are infested with scale insects, codlin moth or other insects that are destructive to trees, and praying that a commission be appointed by them, whose duty it shall be to supervise their destruction as herein provided, the board of supervisors shall within twenty days thereafter select three commissioners for the county to be known as a 'county board of horticultural commissioners.'"

The county board are required to inspect all plantations and buildings in which the presence of injurious insects or fungi is feared.

If such are found notice is served that the pest must be destroyed. If this is not done within a specified time the board is compelled to do the work, the expenses being charged to the owners of the property.

This law does not merely grant certain powers, but is mandatory. The officials are required to enforce it. Nearly all of the fruit growing counties of California have availed themselves of this act.

Michigan passed a compulsory law to prevent the spread, and to provide for the extirpation of bush, vine and fruit tree pests in 1895.

Some of the leading features of this law are found in the sections quoted:

Section 1. The people of the State of Michigan enact that it shall be the duty of every owner, possessor, or occupier of an orchard, nursery, or vineyard, or of land where fruit trees or vines are grown, within this state, to spray with a

poisonous solution or disinfectant of sufficient strength to destroy such injurious insects or contagious diseases, all fruit trees or vines grown on such lands which may be infested with any injurious insects or worms, or infected with any contagious disease known to be injurious to fruit or fruit trees or vines; provided that no such spraying shall be done while said fruit trees or vines are in blossom, except in case of canker worms.

Section 2 provides for the appointment of a township board of three commissioners upon the petition of at least ten freeholders, and the duty of these commissioners is to notify owners of the presence of any injurious parasite, it being unnecessary that a complaint be first made to the board.

Section 5. Whenever any person shall refuse or neglect to comply with the order to spray or disinfect the orchards or vineyard designated by the commissioners, as aforesaid, it shall become the duty of the commissioners to cause said trees and vines to be effectually sprayed with a poisonous solution, or disinfected, as occasion should require, forthwith employing all necessary aid for that purpose, and the expenses for the same shall be a charge against the township; and for said spraying or disinfecting the said commissioners, their agent or workmen, shall have the right and power to enter upon any and all premises within their township.

Section 6 provides that the owners who fail to comply with the notice shall be deemed guilty of a misdemeanor and punished by a fine not exceeding fifty dollars, or imprisonment not exceeding sixty days, or both; and any justice of the peace of the township shall have jurisdiction.

The legislature of the State of Oregon on February 25, 1889, approved "An act to create a state board of horticulture and appropriate money therefore."

This act has been amended several times. It provides that whenever the board becomes aware of the presence of injurious insects or fungi upon certain premises, the owner is to be notified, and such notice shall contain directions for the application of some treatment approved by the commissioners. If the nuisance is not abated by the owners it shall be the duty of the board to do the work, and the expense is made a county charge.

In April, 1892, a law was enacted by the Canadian parliament which forbids the spraying of fruit trees while in bloom with any substance injurious to bees.

On March 14, 1890, the Massachusetts legislature enacted a law whereby the governor was authorized to appoint a commission to provide and carry into execution all possible and reasonable measures to prevent the spreading and secure the extermination of the gypsy moth. In 1891 the entire work came under the control of the state board of agriculture and has since been carried on by this organization.

Perhaps the most unique legislation is to be found in our new State of Utah. An act was approved March 8, 1894, and is entitled "An act authorizing the county courts to appoint fruit-tree inspectors and to provide for the destruction of fruit destroying insects."

Its directions are specific, and if the county judges perform their duty, there should be little trouble in carrying out the provisions of the law.

The law specifies the time or times spraying shall be done and names two or more approved formulas for the preparation of the mixture to be used.

While this law has been enforced and its effect generally regarded as beneficial, it has been pronounced unconstitutional by the supreme court of the state.

Mr. Miller: I would like to have just a few minutes to comply with a request that was made of me to bring a matter before this society. It is a proposed amendment to the present yellows and black knot law of the state which I think is practicable. The law passed two years ago

is difficult to enforce up in our part of the state, and the local horticultural society and the Erie county society want the second section of that law amended. As it is now it requires the petition of not less than ten freeholders of the township, and the Erie county people complain that that is too many, that five is sufficient. In some townships there is little interest in fruit growing and they find trouble in getting that many names.

Resolved, That this society ask the legislature to so amend section 2 of what is known as the black knot and yellows law that it shall require:

1. That but five petitioners be required.
2. That appointment may be made from the petitioners if the trustees desire.
3. That the trustees be compelled to appoint whenever petition ask for such action.
4. That the compensation of the commissioners be increased to two dollars per day.

In addition to that Professor Selby suggested that this be added: "It shall be the duty of the Ohio Agricultural Experiment Station to send a qualified officer to make expert examination of trees thought to be diseased, upon written request of the Board of Fruit Commissioners of any township. The traveling expenses of such officer shall be paid in the same manner as the ordinary expenses of the board of fruit commissioners."

Mr. Albaugh: I think this amendment can be obtained from the legislature and I think it would be valuable. I believe that the amendments can be so formulated that they will pass.

Mr. Ohmer: In order to give this further endorsement wouldn't it be well for the secretary of the state society to send copies of this resolution out to the different horticultural societies and have them also endorse it?

Mr. Woodard: I move that this matter be referred to the executive committee with instructions to present it to the proper authorities at Columbus. (Motion carried unanimously.)

Mr. Woodard: I think every member of this society is interested in this matter and can have some influence by writing personal letters to his representative and senator in the legislature.

Mr. Ohmer: There are many gentlemen who came a long distance to attend this meeting. The Montgomery county horticultural society are glad you came. They feel honored. We are pretty near through with the business of this session, at least we can finish this evening, and we are glad to tender you a ride in our warm cars to visit the Soldiers' Home. We would like to have as many go as will do so.

This invitation was gladly accepted and twenty-five members of the society, with Mr. F. G. Withoft, of Dayton, as chaperon, visited the Soldiers' Home, and the beautiful greenhouse there. Mr. Beck, the superintendent, took great pleasur in conducting th party through the greenhouse and giving much information to the visitors.

EVENING SESSION.

The evening session was called to order by President Cushman at 7:30 o'clock, who said: "The question under discussion at the time of the adjournment was the further action on the report of the committee in regard to the necessary laws. They have something further to offer and we will now listen to that and then discuss it."

Professor Lazenby: Your committee on legislation beg leave to make a supplemental report, and offer the following resolutions:

WHEREAS, The San Jose scale has been introduced into the state and threatens serious injury to the fruit trees in various localities, and

WHEREAS, It appears that the same treatment as given in cases of black knot will be effective in preventing its spread; therefore, be it

Resolved, That in addition to the amendments already recommended to the black knot and yellows law, that it is recommended that trees infested with the said scale be embodied within the provisions of said act.

Resolved, That the secretary be requested to correspond with the secretaries of all the other State Horticultural Societies and request them to bring before their societies the question as to the propriety of the appointment of delegates to a national convention for the purpose of considering means of preventing the spread of noxious insects and fungus diseases by appropriate state and federal legislation.

Respectfully submitted,

W. R. LAZENBY,
O. W. ALDRICH,
F. M. WEBSTER,
Committee.

Mr. Moore: I move the adoption of these resolutions.

President Cushman: Your committee have worked faithfully in this matter. I know this because I have been with them in most of their discussions, having considered pretty near all the grounds that there seemed to be any opportunity to work upon and they had to boil it down to these resolutions that have been offered. These are matters of greater import to the horticulturists of the State of Ohio and of the nation than we might expect at first sight. We all realize that we have to fight for the fruit that we have now, and if we could make it possible to prevent the dumping upon our shores of other insects that are coming. I think it is our duty to take such action as will tend in that direction. I do not believe a foreign country has any more right to dump upon our American shores injurious insects and diseases than they have to put their paupers and criminals here.

And thereupon the resolutions were unanimously adopted.

'Professor Webster: I desire to speak of a point I brought up this afternoon. This resolution is to work in this way: we shall have to whip the careless fellow into line, but I would like to know something about the management of the present case, where, it seems to me, that I have the interests of every nurseryman in the state and every fruit grower in

the state to look after. Now, I confess that I have fought so much that I have got my hand in pretty well and I can fight again, but I do not like to do all the fighting and have you stand back. I would like to have something behind me. I know Mr. Thorne will back me up, but if I have got to expose the nurseries in the neighboring state I want to know whether I am going to have the horticulturists with me.

Mr. Moore: I think that we ought to stand by the Professor in his efforts to wipe out anything that is liable to become a nuisance in the State of Ohio. I do not know in what shape we ought to bring this matter before the society, but I am willing to stand by the Professor, and if he has not got the law to support him we ought to do that much.

Professor Webster: I will tell you what I had thought of doing. In the first place we ought to have the names of the parties to whom that nursery has been shipping trees in Ohio during the last year or two, then I think that we have a right to demand that they shall guarantee free from scale anything that they ship into Ohio hereafter. Now, I have not the law behind me, but I can simply bring them to it just as I have the others.

The Secretary: It is possible that we may find the force of public sentiment strong enough without the law, and if so, for the present at any rate, so much the better. To bring this matter before the society I will offer this resolution:

Resolved, That this society hereby pledge its support to Professor Webster in his efforts to restrain the introduction and spread of all noxious insects.

Mr. Moore: Of course we want to be cautious about attacking a man's business. I would not like to attack a man's business because it is pretty hard for most of us to do business to-day in competition and they might think we were trying to prevent them from coming into the state of Ohio. Of course we could not do that, and we want to be very careful.

Mr. Farnsworth: I do not think that Professor Webster would know any boundary line between Ohio, Indiana, Michigan and the other states. He is working in the interests of the horticulturists every place. If we should locate that San Jose scale in our nurseries in Ohio, Indiana or any other state, his duty would be just the same. More than that, I believe it is to the interest of every nurseryman to have this discovered just as soon as possible before he has gone on and brought upon himself worse consequences. I believe it is not only justice to the people of the state of Ohio but to the nurserymen. The nurserymen buy and sell among each other more or less as a matter of necessity. It is justice to the individual and to the nurseryman whose stock is infected.

Mr. Longenecker: I suppose we can safely trust Professor Webster in this because if he makes false representations he is liable to prosecution and that would make him very guarded. If he is right and when he is not liable to prosecution I think we ought to support him.

Mr. Pierce: While in attendance at the New York horticultural meeting in January, I heard considerable discussion on this matter, and some quite prominent men expressed the opinion that the San Jose scale was not liable to be a pest in the northern part of Ohio and New York state and in that latitude, that the climate was against its propagation. That seemed to be the opinion of parties that ought to know. Also the statement was made there that the Lovet Nursery Co., in New Jersey was not doing anything to amount to anything to suppress the scale in their nursery.

Professor Webster: That they were not?

Mr. Pierce: That they were not. It was stated by a man that he believed they were not.

Mr. Ford: That was no proof that they hadn't any scale.

Professor Webster: The idea of this scale not living beyond a certain line has been stated, but I am sorry to say that it has lived for several years on the ground of the experiment station of Massachusetts.

Mr. Pierce: Why did they allow it to live?

Mr. Webster: They didn't know it, I suppose, until it got fairly established on some trees. I do not think it is living there now. So far as I am concerned, I do not take any stock in that. It came from pretty good authority, but he does not know any more about it than I do. I simply know that I would not trust it any place in the country.

Mr. Moore: Have you found it in Ohio?

Professor Webster: Have found it in Ohio shipped from Michigan. That was presented to me. I have nothing but the man's word, who said he had it on his trees that he bought of a nursery at a certain place.

And thereupon the resolution offered by Secretary Farnsworth was unanimously adopted.

Mr. Longenecker: May I be allowed a word in this connection? Now, the time may come when Professor Webster will have to pursue some vigorous means in this matter and it is necessary that this be published far and wide. Whenever he has proof that he can give to us is it not well for fruit growers who are writing for papers to aid him in publishing this matter? In that way we can make it known among fruit growers and in that way prevent men from buying trees. Most nurserymen, if they are unscrupulous, would be brought to time in that way when they would not be brought to time in any other way.

President Cushman: I have been asked and asked again when we're to select a place for the next meeting. I do not know of any better time to settle that matter than now.

Mr. Pierce: Why is it necessary to break over the old custom?

Dr. Aldrich: My recollection is this, that at the annual meeting in the fixing of the place it was referred to this meeting, and therefore if we do not now wish to take it up, probably the only right thing for us to do is to postpone the consideration until the state fair meeting, and in order

to bring that up I would move that the consideration of the matter of fixing a place for the next annual meeting be postponed to the state fair meeting.

Mr. Miller: It has occurred to me that so few members are at the state fair meeting that it would be better if it were placed entirely in the hands of the executive committee, and in order to bring up that matter I move an amendment that it be placed in the hands of the executive committee.

Professor Lazenby: I second the motion to amend. I understand, although I was not present, that it was the recommendation to hold several meetings the coming year after the annual meeting, but during the year if it was practicable or possible. That recommendation was favorably considered and the places where those meetings would be held would perhaps govern to some extent the matter of the annual meeting. If the annual meeting is to be a meeting for all of the members it ought to be central, then these other meetings, if they are to be held, can go to the different parts of the state and do missionary work.

Mr. Miller's motion to amend was lost.

And thereupon the motion to select the place of next annual meeting, at the state fair meeting, carried unanimously.

Mr. Moore, after stating that Mrs. Arthur had already extended an invitation to the state society on behalf of the Muskingum county horticultural society, to hold its next annual meeting at Zanesville, Ohio, seconded that invitation on behalf of the Board of Trade and the citizens of that city.

President Cushman: I will explain a little in regard to this paris green matter. It was stated at the December meeting that it was quite possible that paris green was adulterated. I did not think much about it at the time and after that meeting was adjourned and I had gone home I was thinking of what the state society could do for the benefit of horticulturists, and it occurred to me that I would have paris green analyzed, so that we might know the truth or falsity of its being adulterated for the coming season, and after some correspondence I found it possible to have it analyzed, and Professor Lazenby has had charge of the matter and I will call upon him to make a report.

Professor Lazenby: I have only a brief report to make. As the president has suggested, samples of paris green were received from eight members, I believe, of the ad interim committee coming from different parts of the state. One sample was secured by myself from Columbus so that there were nine samples analyzed by Professor Webber. He found upon analysis that these samples were all pure, what would pass as pure, and in fact had a somewhat higher percentage of arsenic than was usually claimed for a good article of paris green, namely sixty per cent. There was only one or two that fell a trifle below sixty per cent. and Professor Webber said that it was so small that it might come within

the limits of error in the work. He was gratified with the results and so was Dr. McNeal, our Dairy and Food Commissioner.

In correspondence with the president in regard to this matter I became somewhat interested in the subject and looked up the matter as far as I could to see what had been done in other states, and in Alabama I found the station has analyzed a number of samples and some of them contained no arsenic whatever. I would say further that in consulting with a wholesale druggist in Columbus who supplies the retail dealers he stated that as far as he knew all of the paris green now used is pure. There was a trust formed and the manufacture of it was all in the hands of a very few men, a perfectly responsible and reliable firm. He thought there would be no danger as long as it was in these hands that it would be adulterated. This letter was received from Dr. McNeal after Professor Webber reported to him. He says: My dear Sir:—Professor Webber reports to me that the nine samples of paris green which were given him by the state horticultural society were analyzed and were all found to be pure. I hope your society will receive with satisfaction this analysis of these samples. We should be glad to investigate any other substances that fall in the same line. Yours very truly, F. B. McNeal.

Now, if there is any question about hellebore or any other insecticide or fungicide that is used, I think from the conversation I had with Dr. McNeal in regard to it, he would be very glad to have the samples analyzed.

President Cushman: I feel as though we had accomplished quite a beneficial work in this little effort. It has satisfied us that we are not in great immediate danger and maybe we can go ahead with more certainty this year.

Mr. Miller: We have obtained this information without cost to this society and we certainly ought to feel indebted to Professor Lazenby, Professor Webber and to Dr. McNeal for their efforts in this matter, and I move a vote of thanks of this society to these gentlemen.

Professor Lazenby: Gentlemen, I have done very little of this work. (Motion carried).

President Cushman: I have three committees to appoint: Committee on revision of state fair fruit premium list: E. M. Woodard, S. R. Moore, and Theodore F. Longenecker.

Committee on revision of constitution and by-laws: W. W. Farnsworth, William R. Lazenby, and W. N. Scarff.

Committee on preparation and posting of fruit lists at state fair: W. J. Green, William Miller, and N. Ohmer.

President Cushman: We have upon our program this evening the subject of home adornment, and have invited Mr. F. W. Ritter to present a paper upon that subject.

RURAL ADORNMENT.

By F. W. RITTER.

You have had so much of the useful in the past two days that your secretary has asked me to give you something in the way of ornamental for dessert. Some one has said that the ornamental is as useful as the useful; perhaps more so. Many persons pass the greater part of their earthly existence at home. This is especially true of the horticulturist. Home is his place of business, and there he and his family spend most of their days. It is therefore proper that that home should be made as attractive, both within and without, as his time and means will allow. The adornment of the interior can safely be left to the ladies of the house, but to the man belongs the task of out-door adornment; but, I am sorry to say, this also often falls to the lot of the ladies, for many men think that an hour spent in mowing the lawn, spading up a flower bed or pruning a shrub is time wasted.

The adornment of the home need not necessarily entail a large expenditure of money, neither does it require a great deal of labor, for the planting can be of a permanent nature and when once planted will require no renewal, simply keeping the beds or borders free of weeds and giving the necessary pruning to the trees and shrubs.

The first thing we want in planting a place is the lawn. It is outside what the carpet is within the house; it is the groundwork on which to build in all improvements of a place, whether a small city front yard or a large place in the country.

The lawn is not merely a small meadow surrounding the house to be used for pasturing the horse or cow, or to be mown for hay. It is a piece of grass to be given up to ornamentation solely, and should be maintained with no other object in view.

We will also want trees, shrubs and flowers; no home is complete without these.

In the selection of trees and shrubs some judgment is required, as in the proper selection of varieties depends the future beauty of the place. For large places I know of none more suitable or more beautiful than our natural forest trees, as the elms, rock maples, Lindens and others. Oaks should not be planted on the lawn, as they have a disagreeable habit of shedding their leaves all through the winter, thereby keeping the lawn always littered up.

The Carolina poplar is another tree unsuited for lawn planting. It is a weedy tree that has nothing to commend it but rapid growth.

Evergreens of large growth should not be used on a small place. They are spreading in habit, and soon occupy all the space on a small place, to the exclusion of more desirable trees and plants. For small lots or front yards, if we must plant trees, our native trees again come in play by selecting such as the redbud, dogwood, sassafras, haws, pawpaw, etc. The latter is a very handsome tree on any place when well grown, its foliage rivaling in beauty that of the magnolia. These small trees are also suitable for massing on a large place, and are often preferable to those of larger growth. Most trees that make truly handsome specimens are of slow growth, and in our eagerness to obtain large trees quickly we often get undesirable ones.

Shrubs are indispensable in planting a place; if our place is large we can use them freely, but do not dot them about promiscuously all over the lawn nor plant them in straight lines. A much more pleasing effect is produced by massing or planting in irregular groups or borders. By using varieties with light or variegated leaves along with those of dark green foliage a very beautiful effect is produced. Other varieties are very pretty when grouped alone.

The planting of shrubs should be on the borders of the lawn, leaving the center or in front of the house unbroken sward.

A careful selection of varieties of shrubs will afford a succession of bloom during the entire spring and summer. In early spring we have the magnolia, spirea, lilac, snowball and others; syringa, white fringe and roses in June, and the altheas in midsummer.

The Mahonia is a fine evergreen shrub, resembling the holly. It should be grown in partial shade, as the leaves turn brown when exposed to the midday sun in winter. The Barberry and our common Sweet Briar are pretty for late ornament, as their bright berries are very showy in winter. Shrubs, like trees, require pruning, but some knowledge of their habits is necessary in pruning.

Early spring flowering shrubs produce their flowers on the previous season's growth and should not be pruned until they have bloomed, when they will produce new wood for the next season's flowers. Among these are the Mock Orange, Deutzia, Weigelia, Snowball, Calycanthus, Spring Flowering Spirea, etc. Shrubs that produce their flowers on the present season's growth or the young shoots should be cut back in autumn or early spring in order to secure growth that will produce flowers in abundance. Of these we have the White Fringe, Althea, Fall Flowering Spirea, Burning Bush, etc.

Bulbs and herbaceous plants should also be used freely. By herbaceous plants we mean those that die down after flowering to spring up again the following spring and again bloom, which process they keep up indefinitely. Many of this class may be planted among the shrubbery, to fill in the bare spaces. Lilies are especially suited for this treatment as the shade afforded them there is of benefit. By a careful selection of hardy plants we can have flowers from spring until winter.

The first flowers to make their appearance in early spring are the Crocus, Snowdrops, Squills, etc.

The Arabis Alpinus is a very pretty plant for edging. It is of a spreading habit, covered with small white flowers in early spring. Golden Alyssum is another very showy early flower of bright golden color; then come the Tulips, Hyacinth, Columbines, Pyrethums, Moss Pinks, Peonies.

The dazzling scarlet Oriental poppies, hardy coreopsis, with large golden yellow flowers from June until August. German Iris in a variety of colors, larkspurs with large spikes of flowers of the most intense blue. Hardy phloxes are among the grandest of hardy flowers producing massive clusters of flowers in all colors, from white through pink, rose, crimson, scarlet. Hibiscus, crimson eye, hardy gaillardie, are all pretty, and bloom in the late summer and autumn. For tropical effect, a group of yucca filamentosa is indispensable.

These are a few of the hardy flowers we can plant that require very little care after once planted, and will supply an abundance of flowers throughout the season with a minimum amount of care.

In autumn these flowers may lose their glory
Beneath the touch of frost, but do not die.
In spring they will repeat the old, old story
Of God's dear bye and bye.

Mr. Moore: There are one or two shrubs that are quite attractive. I did not notice whether he mentioned them or not. They are the Magnolia Purpurea and the Magnolia Gracilis, also the Magnolia Glauca. I do not know how they would stand the winter here in this level country, but down about us I have not known them to be killed except by very

late spring frosts. There are two or three trees in one of our cemeteries as tall as this ceiling and they are most magnificent specimens.

Mr. Pierce: The paper just read presented in a very excellent compact form many good ideas on the subject treated, but there is one thing that I shall criticise and that is the use of suckering trees, like the sassafras, on lawns. I have never seen the paw-paw, but that has the same fault.

Mr. Ritter: It resembles the Magnolia. I have eaten the fruit here in Dayton a number of times. In regard to sassafras, I have had a sassafras tree on my lawn for eight years and I have never seen a sucker from it at all on the lawn. Just as nice and symmetrical a tree as I have on the place.

Mr. Petersime: I would like to ask anyone here who has had any experience in transplanting paw-paw. They are a very beautiful shrub when they grow out in the open and they have a most beautiful brown bloom on them early in the season. They will not grow for me when transplanted. I can find them all sizes down to a foot high, but they will not grow when transplanted. If there is any particular size for transplanting, I would like to know it.

Mr. Ritter: I have handled probably about 100 paw-paw trees at different times, dug them in every way, cut them back and planted them and never succeeded in making one grow. The only way I can make them grow is to plant the seed.

Professor Lazenby: Our experience corresponds with that of Mr. Ritter. We have endeavored to plant a number on the grounds and took what we supposed was a good deal of pains, but they did not live. There is one tree that Mr. Ritter did not mention that in my judgment is very fine, and that is the cut-leaf Weeping Birch. It is hardy and not a very large tree. There is another point that I would like to emphasize which was presented very well by Mr. Ritter, and that is that more depends upon the *arrangement* as regards the beauty of a place, than upon the *selection*. I think a few of the very common trees and shrubs, if they are properly arranged make a far better effect than some of the finest specimens without arrangement. It is not the trees and shrubs and flowers that make a pretty place, it is the proper arrangement of trees, shrubs and flowers. We want a picture presented to the eye. We have seen places that we call cosy and homelike. I have passed places where I had wished I had the power to make a sketch or had a camera to take a view. Why was it? There were a great many places where more money was spent that I didn't care anything about. In the first place there was a picture presented. The great thing in a picture is to have the framework, and if you get the framework by the proper arrangement of the trees and shrubs, that helps very much to make the picture.

Mr. Ford: There are three or four other trees that have not been

mentioned that are very beautiful on a lawn. One is the red-leaf Beech, and it is one of the finest trees I have ever seen. It is slow in growth. We have one in our lawn planted twenty years ago, not over eighteen feet high and spreads out very wide. It is one of the most beautiful trees we have. Another tree, there was one in our cemetery, is what is called the yellow-wood, one of the finest blooming trees; the real name is *Virgillea Lutea*. It is a peculiar growth tree, very slender. I endorse what is said about the cut-leaf Birch. We have one fine specimen in our yard. It is a foot through at the base. There is another tree, the Norway Maple, and next to the Rock Maple or Sugar Maple, it is the finest Maple of all. The leaves are very dense. Judge Robbins and I were sitting in the shade of one of them one day and he picked up a leaf that measured eleven inches across.

Mr. Pierce: In rich ground the Norway Maple makes an enormous tree. .

Mr. Ford: Yes, but they do not grow as fast as the Sugar Maple. Some of those larger trees of ours were taken up and set at the side of the road and they have stood there without making a very large growth.

Mr. Moore: There are a few other shrubs. There is one that is a native, and I did not notice whether it was included in the list or not, that is the Laurel which is a native in our hills down in Eastern Ohio. But I think it does not grow here anywhere in this section of Ohio. Now, it has been tried by a number of our own people who have it on their farms to remove it to their lawns and place it about houses. They almost always fail. We have tried quite a number of specimens and it does not pay to try to get the largest. We can go right into the forest and bring them in and without any extraordinary care they grow as readily as any other bush or tree. Mr. Pierce was at our place and we visited one place down the river and we loaded him down with Laurel and he knows how they grow down there in the hills, and I think if you could grow that upon your lawns you would find it one of the most interesting and beautiful plants that can be had. I do not know whether they are sold very much from the nurseries. Speaking of the Norway Maple, the nurserymen do not like to grow this tree very well and it is hard to get them started like the Sugar or Silver Maple, and if you get a maple from the nursery and it proves to be a little rough and crooked, do not condemn the nurseryman because it will get straight and smooth. In our cemetery where there have been several hundred planted along the avenues, when they were first planted were miserable looking things. Then there is another, known as the wild cucumber, or *Magnolia Acuminata*. It is very symmetrical in form, handsome leaf and has clusters of fruit that are very beautiful along during the fall. I ought to state that the *Magnolia Tripetala* with us is one of our handsome plants.

Mr. Moore: There is another plant that I should have mentioned

Dr. Pierce: That is somewhat common in Kentucky and Tennessee, but it is not here. It is not very high and spreads out very wide.

Mr. Moore: I planted some in the cemetery years ago and they are just as nice and symmetrical as you could ask. They are not easily handled. It is a peculiar growth tree very slender.

President Cushman: There are a great many of the Carolina Poplar being planted extensively where they are in a hurry to get some trees started. I question whether it is good policy to plant them. But it is being done, and especially around our cities where they lay out big allotments and are in a hurry to have shade.

Professor Lazenby: I think there is one point made for the Carolina Poplar that it will grow under conditions that other trees will not.

Where there is a dense smoke for instance the leaves are so smooth and shiny that they are not injured.

Secretary Barnsworth: I think it a very good plan where we want immediate effect to plant the Carolina Poplar alternately with the Norway Maple, because we know there is nothing so satisfactory for shade as the Norway Maple, but it is a great while in attaining any size and beauty and by combining the work we can get an early effect and a lasting effect. I am glad to hear of the cut-leaf Weeping Birch mentioned. I think if I were confined to one aside from our native trees it would be the Birch. I also like the Lindens. I have a white-leaved European Linden that has not proved hardy. It grew rapidly and formed a shade where I wanted shade very much and within a few years the tree was half dead.

Mr. Moore: There is one objection we find in the Lindens. They get sort of borers. We have not succeeded with a European Linden. They grow well for a while but they do not last long. There is another Birch that looks a good deal like the cut-leaf Weeping Birch, it is the Betula alba. It has a bark just the same as the cut-leaf Weeping Birch, and is often sold for the cut-leaf Weeping Birch. Be careful when you buy that you get the cut-leaf Weeping Birch. It is much easier grown than the other.

Mr. Leach: I was not going to say anything about the basswood, but the borer until the subject of its having borers came up. One man imported some Lindens from Germany. He thought they were something very nice, but I notice that within the last two years nearly every tree is dead from the borers, but our American basswood and Linden is a tree that never had any borers in it. Also the white wood or Tulip tree.

Mr. Audubon: I would like to know the names of the trees, whether it is Silver Maple, or Silver Poplar or Carolina Poplar or some-

thing else to recommend it to people in town. I am not opposed to this subject. I am told that the Silver Maple grows fast and up to 20 ft. tall. Our test round last year a Silver Maple 1 ft. It should see/bore/. The biggest objection to planting trees in towns is that they grow too close to the ground too high and raise the question of maintenance of trees or do you recommend planting along the pavement in the small towns that do not raise the pavement?

RESOLUTION OF THANKS

Mr. Moore has had considerable experience in our own town. He has furnished nearly all the stoves here except the Celos. We have tried nearly everything in the new kind but haven't too high priced, and the one tree that in our smoky town we can make use of and to be recommended and that we have tried for nearly thirty years is the Acer dyscarpinum. Now we have tried some Linden, both the European and American. We have also tried the Lombardy Poplar. They only last a few years at best and I never did recommend them. They are only from Germany. The Milk white birch they say is good. Now Mr. Moore The Sugar Maple does not get so early as the Norway Spruce. There is another mistake we frequently make and that is in the selection of the Norway Spruce. It is not so satisfactory in our town. It becomes like the Linden, full of holes, and the Silver Birch Maple can be chosen and the most satisfactory.

[illegible]

Mr. Ford: That is our native maple?

Mr. Moore: Yes, it grows in winter.

Question: What is the best time to winterize for market?

Mr. Farnsworth: The Lawrence, I guess, so far as I know.

Secretary Farnsworth: I do not believe there has been any other letter.

Mr. Ford: In my opinion the first two or three years of the life of a young man should be spent in the study of the principles of the law, and the rest of his life should be spent in the application of those principles to the facts of life.

Mr. Ford: They feature houses with a large fireplace, built as squash, and warm. I knew one man that had a very comfortable room and a lot of land. He kept his sweet potatoes stored.

President Cushman: There are some general questions remaining.

upon the program not discussed. If you wish to bring up any of these questions you are at liberty to do so.

Mr. Woodard: In the discussion of trees and shrubs that we have just listened to it seemed as though almost everything was mentioned and so in these resolutions we tried not to leave anything out.

RESOLUTION OF THANKS.

Resolved, That the thanks of the Ohio State Horticultural Society are due the Montgomery County Horticultural Society for their courtesy shown us in securing so good a place in which to hold our meetings, for the trip to the Soldiers' Home and for all their kindness to us. Also to those members bringing exhibits, to those who have responded so promptly to their names on the program, to the press for the notice given these meetings, and to the hotels for their accommodation.

Question: What is the best manner of trimming blackberries, red and black?

Mr. Pierce: Mr. Kellogg, that bright and shining light of Michigan, who has so many new ideas, is continually harping on this in the American Farmer. He insists that it stunts the raspberry or stops its growth, just to simply pinch it when it is knee high, and he insists that it is better not to do it.

Mr. Aultfather: I make it a rule to top my raspberries when they get from eighteen to twenty-one inches high and I do not think it hurts them if it is done at that time. But if we wait till they get to the hard wood it injures them.

Secretary: I do not think that removing a half an inch or an inch from the end of the shoot would have any material effect on the plant. It would check its forward growth but that would thicken up the stock and would find outlet in the laterals. You are not removing any of the plant. If you remove any amount of the foliage of the plant during the growing season you check the plant. We may pinch off a little part of the plant and not check the development of the plant. It changes the form of development.

Mr. Pierce: He has tried it repeatedly and those rows that are pinched show a marked stoppage of growth. It showed that something has happened to them.

Mr. Waid: It does not seem to me it would be possible to make the bush self-supporting without pinching off.

Mr. Pierce: He wires them up.

Mr. Ford: In my opinion there are two or three objects in pinching back. First if you want to make plants, pinch them down short. If you want to make canes for growing fruit, wait until they are about two and a half feet high then pinch the top, but if you want them to grow up and produce plants pinch down one and a half feet at least.

Mr. Miller: I would like to ask how short these lateral branches should be cut back in the spring?

Secretary Farnsworth: From ten to twelve inches.

Mr. Aultfather: Yes, you have larger berries by not leaving the branches too long.

President Cushman: It does seem that Mr. Kellogg has got the raspberry growers where they cannot answer that question.

Mr. Longenecker: Whenever we find that a number of men are following a system there is generally some reason for that practice, and among the raspberry growers here for the last twenty years they have been working their raspberries down lower because they find they do better. It has lessened the cost of production.

Question: What new implements have you found valuable?

Secretary Farnsworth: In a letter I received recently from a gentleman in Michigan he spoke very highly of a Diamond Disc Reversible Harrow. I am not interested in it any more than I expect to get one of those or Clark's cut-away. I understand that they have an attachment for widening and adjusting the machine.

Mr. Ford: We have found the Acme Harrow a very good implement. I have worn out two and will get another next spring. They can be renewed at a trifling cost. We find it one of the best implements we have ever used. They are now a wheel harrow. S. S. Allen & Co. are making one that they can extend so that it will reach out a foot and a half or two feet outside of the horses, and there are some in Akron building them with that extension.

President Cushman: I do not get your idea.

Mr. Ford: A wheel cultivator with about the same kind of teeth as the New Planet, Jr., but there is an extension on each side with two teeth, wider than the ordinary cultivator.

Mr. Pierce: It is called the Akron Cultivator.

Mr. Ford: Allen & Co. has one. I noticed it recently in the same line.

Mr. Pierce: The Albaugh Nursery Co. are using that Akron implement in their peach orchard in Georgia.

Mr. Miller: Our horticulturists find nothing so good as the Cut-away Harrow. The one mentioned by Mr. Farnsworth is used more than any other, made by the Johnson Harvester Co. One of my neighbors told me the other day that the Oliver Chilled Plow Works were now making a very superior implement for that purpose. Something ahead of anything else.

Mr. Woodard: I have been trying to think of the name of the horse-hoe that I have been using. I think it is made by the Champion Company at Springfield. It is a wheel horse-hoe with shafts and we find it in a good many places better than the Morgan or the Euclid horse-hoe, especially on side hills, because it can be raised or lowered to suit the incline of the hill and make the hoe work on a level all the time.

President Cushman: I have one of those tools at our place. I watched a gentleman use it and it worked very nicely. You can shift it here or there, deep or shallow and do things up in good shape. Mr. Farnsworth: There is a little implement called the Gem Cultivator. It is a little implement, costing only \$1.00, light and handy. I prefer the single wheel for the reason that you can work it into vacant places in the rows. Mr. Pierce: I have a Welder and in gravelly or stony ground it is of no use, but it is a fine tooth implement. You have got to have your ground just right for it. Every year I plow up two or three acres of raspberry or blackberry ground also some clover sod and if it is cloyed or

Mr. Moore: I am not here to advertise any implement, manufacturer, but the less little one horse concern that I have come across, yet it is a little toothed cultivator made by the Brown Manufacturing Co. of Zanesville, Ohio. There are two different ways of making it, one so that you can widen or close according to the rows without stopping, with a lever. Another is the use of a screw set. You have to bring it to a stop to do that. They have it with a wheel or without a wheel.

Question: Can peach trees be grown to support a heavy crop without breaking the limbs? President: That has been considered.

Question: Is it advisable to grow small fruits in an orchard, and if so, what kind, and how long may it be continued safely?

Mr. Pierce: That depends on what small fruits you are growing. If you grow strawberries they can grow two or three years, but I do not like to grow raspberries or blackberries. If you grow them among peach trees, the trees will come into bearing before the berries are removed. Same with the plum trees. They interfere with the spraying, and are nuisances generally. I would not grow anything else than strawberries in an orchard.

Mr. Aultfather: I have had raspberries growing in my orchard for six or seven years, set out the same time the orchard was.

Question: Are they doing well?

Mr. Aultfather: The berries bore a pretty good crop the first two or three years, but I think it is a detriment to the trees, and I have come to Mr. Pierce's conclusion.

Secretary Farnsworth: I have thought about this question, a good deal and practiced it some, and I have never planted anything of that kind among peach trees, and I hardly consider it advisable to plant anything of that kind except strawberries, for the reason that they come into bearing so soon, but in apple trees and pear trees I would plant raspberries and blackberries, although I do not expect to plant any more blackberries. I would plant raspberries or blackberries or strawberries until the orchard came into full bearing. After that I would not con-

side it is advisable to grow anything in an orchard. There are advantages and disadvantages. You utilize the ground and another advantage is you are not obliged to plow your orchard for four or five years. You are cultivating with one horse and it is a good deal easier to do that than to plow with two horses. The disadvantages were seen more plainly this last year in the dry season for if your trees grow and extract the moisture from the soil in the dry season the trees or the small fruits will suffer more from lack of moisture than if only one crop occupied the ground.

Mr. Pierce: It would like to make an exception in regard to red raspberries. They are a very nice thing to grow in an orchard.

Mr. Longenecker: Do the trees fruit well where the trees have attained any size? Do they fruit as well as out in the open?

Secretary Farnsworth: I could not say as to that, because my trees were planted at the same time as the currants. They are fairly good size but not to shade the ground particularly. I have found it very difficult to start an orchard if it was planted a year or two after the raspberries were planted. Plant the trees at the same time or they will be difficult to start. Perhaps it would be better to plant the trees a year or two before the small fruits.

Mr. Waid: I have had a little experience in planting trees and small fruits together and have learned some lessons from it. In the spring of '91 I planted two acres of plums and raspberries on the same ground. I planted raspberries seven feet apart, a row of plum trees, in every other row a row of raspberries, and the plum trees have not made the growth the last two seasons I would wish. The last season I cut out the berries on half the patch and I could notice a very perceptible difference in the growth of the plum trees where the raspberries were taken out last spring over and above that where they were not taken out.

Mr. Aultfather: I am interested in that sixth question. Is it desirable to plow orchards in the fall, and if so, why and when?

Secretary Farnsworth: I should say that there would be an objection to it. I know some practice it, but the one objection I can see would be that we always consider that the ground that is covered in the winter will retain fertility better than that which is bare. Professor Bailey recommends in his orchard culture not to plow in the fall, yet as he wrote me, on general principles and in general cases he would not advise it and did not advise it, but he said he was at that time plowing one of his orchards, so that you see there are exceptions to all the general rules. I do not plow my orchards in the fall unless in some exceptional case.

President Cushman: Before adjourning I would like to thank the members of the society for their help in conducting the meeting without any unpleasantness. I want to thank the committees who have so

willingly performed the work which I have asked them to do, and hope that you may all return to your homes and meet with greater success in the coming year than in the past.

Mr. Woodard: I want to say just a word before we close. It is proper that we include our president among those who were tendered a vote of thanks, for the success of our society during the past year has been largely due to the energy of our president. I therefore move that we extend to our president a vote of thanks for the work he has done in the past year. (Motion carried.)

And thereupon the convention adjourned *sine die*.

LIST OF HORTICULTURAL SOCIETIES IN SEVENTH DISTRICT, WITH OFFICERS.

1. Geneva Horticultural Society, organized January 17, 1896; meetings monthly. Officers, Wm. R. Monroe, President, Unionville, Ohio; Geo. T. Watts, Secretary, Geneva, Ohio.
2. Ashtabula Horticultural Society, organized January 25, 1896; meetings monthly. Officers, Samuel Newton, President, Ashtabula, Ohio; John S. Sill, Secretary, Ashtabula, Ohio.
3. Geauga County Horticultural Society, organized February 5, 1896; meetings quarterly. Officers, J. C. Wells, President, Claridon, Ohio; L. T. Ray, Secretary, Claridon, Ohio.
4. Chagrin Falls Horticultural Society, organized February 8, 1896; meetings monthly. Officers, J. E. Phelps, President, Chagrin Falls, Ohio; Geo. B. Huggett, Secretary, Chagrin Falls, Ohio.
5. Central Cuyahoga County Horticultural Society, organized April 27, 1895; meetings monthly. Officers, J. L. Foote, President, Brooklyn, Ohio; H. H. Richardson, Secretary, Brooklyn, Ohio.
6. Eastern Cuyahoga County Horticultural Society; meetings monthly. Officers, E. H. Cushman, President, Euclid, Ohio; Miss N. D. Keys, Secretary, Euclid, Ohio.
7. Lorain County Horticultural Society; meetings quarterly. Officers, E. C. Foster, President, North Amherst, Ohio; N. L. Cotton, Secretary, North Amherst, Ohio.
8. Lake County Horticultural Society; meetings monthly. Officers, J. J. Harrison, President, Painesville, Ohio; H. B. Drake, Secretary, Painesville, Ohio.

FRUIT LIST OF FIRST DISTRICT.

By C. H. WAID, Member of Ad Interim Committee of above District.

STRAWBERRIES.—Home use, three varieties: Crescent, Jessie, Cumberland.

REMARKS.—We would recommend Crescent, not for quality, but for universal productiveness.

STRAWBERRIES.—Market, three varieties: Crescent, Lovett, Bubach, Haverland.

RASPBERRIES.—Black, home use, two varieties: Palmer, Gregg.

RASPBERRIES.—Black, market, two varieties: Palmer, Ohio, Gregg.

REMARKS.—Eureka *promises* to be very desirable for both home use and market.

RASPBERRIES.—Red and purple, home use, three varieties: Shaffer, Crossal, Cuthbert.

RASPBERRIES.—Red and purple, market, three varieties: Cuthbert.

REMARKS.—Royal Church and Loudon have not been tested here.

CURRANTS.—Home use, three varieties: Red Dutch, Victoria, White Grape.

CURRANTS.—Market, three varieties: Victoria, Fay, on suitable soil.

REMARKS.—North Star not tested.

GOOSEBERRIES.—Home use, four varieties: Houghton, Downing.

GOOSEBERRIES.—Market, four varieties: Downing, Houghton.

BLACKBERRIES.—Home use, two varieties: Taylor, Snyder.

BLACKBERRIES.—Market, two varieties: Snyder.
DEWBERRIES.—Home use, best variety: Lucretia.
DEWBERRIES.—Market, best variety: No variety found profitable here.
GRAPES.—Home use, six varieties: Worden, Pocklington, Concord, Delaware.
GRAPES.—Market, four varieties: Worden, Concord, Niagara.
REMARKS.—This is not a grape-growing section. But few are grown except for home use.
APPLES.—Summer, home use, three varieties: Yellow Transparent, Early Harvest, Sweet Bough, Red Astrachan.
APPLES.—Summer, market, three varieties: Yellow Transparent, Red Astrachan.
APPLES.—Autumn, home use, three varieties: Maiden Blush, Duchess.
APPLES.—Autumn, market, three varieties: Maiden Blush, Duchess.
APPLES.—Winter, home use, six varieties: Baldwin, Golden, Red Greening, Morris Red, Tolman Sweet.
APPLES.—Winter, market, four varieties: Baldwin, Ben Davis, Morris Red, Stark.
PEARS.—Summer and fall, home use, six varieties: Clapp's Favorite, Flemish Beauty, Bartlett, Sheldon.
PEARS.—Summer and fall, market, four varieties: Flemish Beauty, Bartlett, Kieffer.
PEARS.—Winter, home use, three varieties: Lawrence.
PEARS.—Winter, market, three varieties: No winter pears are grown here for market.
PEACHES.—Home use, six varieties: Early Crawford, Mt. Rose, Late Crawford, Smock.
PEACHES.—Market, six varieties: Alexander, Early Crawford, Smock.
REMARKS.—Peaches have been planted here by the thousand during the last four or five years, but are not sufficiently tested to determine best varieties.
PLUMS.—Home use, six varieties: Lombard, German Prune, Bradshaw.
PLUMS.—Market, six varieties: Lombard.
REMARKS.—Plum growing for market is in its infancy yet here, but many orchards have been planted recently.
QUINCES.—Home use, two varieties: Orange.
QUINCES.—Market, two varieties: Orange, Meech.
CHERRIES.—Sour, home use, two varieties: Early Richmond, Montmorency.
CHERRIES.—Sour, market, three varieties: Early Richmond, Montmorency, Montmorency.
CHERRIES.—Sweet, home use, three varieties: Not grown.
CHERRIES.—Sweet, market, three varieties: Not grown.
APRICOTS.—Home use, three varieties: Too susceptible to spring frost.
MISCELLANEOUS REMARKS.—Care has been taken, not to recommend a variety unless fully tested. Some of the newer varieties may prove more desirable than those recommended.

FRUIT LIST OF SECOND DISTRICT.

By E. M. BRECKIN, Member of Ad. Interim Committee of above District.
STRAWBERRIES.—Home use, three varieties: Lovett, Greenville, Warfield.
STRAWBERRIES.—Market, three varieties: Haverd, Greenville, Lovett.

Business.

CHERRIES.—Sour, market, three varieties: Early Richmond, English Morello and Large Montmorency.

CHERRIES.—Sweet, home use, three varieties: Yellow Amber, Early Purple.

CHERRIES.—Sweet, market, three varieties: Yellow Amber.

REMARKS.—Sweet cherries do not pay in this section; fail too often.

Apricots.—Home use, three varieties: Would not plant any.

REMARKS.—Never saw an apricot ripen in our place yet.

FRUIT LIST OF THIRD DISTRICT.

By F. G. WITHOFT, Member of Ad Interim Committee of above District.

STRAWBERRIES.—Home use, three varieties: Greenville, Marshall, Haverland, Bubach, Western Union.

STRAWBERRIES.—Market, three varieties: Staples, Greenville, Western Union, Haverland, Crescent, Tom Walker.

RASPBERRIES.—Black, home use, two varieties: Hilborn, Palmer, Eureka.

RASPBERRIES.—Black, market, two varieties: Palmer, Eureka, Ohio, Gregg.

RASPBERRIES.—Red and purple, home use, three varieties: Shaffer, Cuthbert, Marlborough.

RASPBERRIES.—Red and purple, market, three varieties: Shaffer, Cuthbert, Miller.

CURRENTS.—Home use, three varieties: Fay's, White Grape, Red Dutch.

CURRENTS.—Market, three varieties: Fay's, Red Dutch, Cherry.

GOOSEBERRIES.—Home use, four varieties: Downing, Smith, Industry.

GOOSEBERRIES.—Market, four varieties: Houghton, Smith, Downing, Industry.

BLACKBERRIES.—Home use, two varieties: Ohmer, Snyder.

BLACKBERRIES.—Market, two varieties: Ohmer, Snyder.

DEWBERRIES.—Home use, best variety: Lucretia.

DEWBERRIES.—Market, best variety: Lucretia.

GRAPES.—Home use, six varieties: Pocklington, Niagara, Jefferson, Woodruff Red, Worden.

GRAPES.—Market, four varieties: Concord, Worden, Delaware, Woodruff Red, Early Ohio, Jefferson.

APPLES.—Summer, home use, three varieties: Yellow Transparent, Early Harvest, Benoni.

APPLES.—Summer, market, three varieties: Western Beauty, Yellow Transparent, Red Astrachan.

APPLES.—Autumn, home use, three varieties: Duchess of Oldenburg, Wealthy, Maiden Blush.

APPLES.—Autumn, Market, three varieties: Duchess of Oldenburg, Wealthy, Maiden Blush.

APPLES.—Winter, home use, six varieties: Grimes' Golden, Stark, Jonathan, Wine Sap, Baldwin.

APPLES.—Winter, market, four varieties: Ben Davis, Stark, Grimes' Golden, Gano, Baldwin.

PEARS.—Summer and fall, home use, six varieties: Bartlett, Seckel, Flemish Beauty, Duchess, Bell's Cluster.

PEARS.—Summer and fall, market, four varieties: Bartlett, Flemish Beauty, Duchess.

PEARS.—Winter, home use, three varieties: Vicar, Lawrence, Winter Nelis, Kieffer.

PEARS.—Winter, market, three varieties: Vicar, Lawrence, Kieffer, Winter Nelis.

PEACHES.—Home use, six varieties: Mt. Rose, Crawford Late, Elberta, Diamond, Dean's Red, Free Globe.

PEACHES.—Market, six varieties: Salway, Smock, Elberta, Diamond, Dean's Red, Globe, Hillhouse.

PLUMS.—Home use, six varieties: Lombard, Pond's Seedling, Bradshaw, Geuii, Murdy, Japan.

PLUMS.—Market, six varieties: Lombard, Shipper's Pride, Bradshaw, Geuii, Murdy, Japan.

QUINCES.—Home use, two varieties: Orange, Champion.

QUINCES.—Market, two varieties: Orange, Champion.

CHERRIES.—Sour, home use, two varieties: Dyehouse, Montmorenci, Olivet.

CHERRIES.—Sour, market, three varieties: Dyehouse, Olivet, Montmorenci.

CHERRIES.—Sweet, home use, three varieties: Governor Wood, Napoleon, Seederberger, Black Tartarian.

CHERRIES.—Sweet, market, three varieties: Governor Wood, Napoleon, Seederberger, Yellow Spanish.

APRICOTS.—Home use, three varieties: Early Golden, Moorpark, Czar of Russia.

APRICOTS.—Market, three varieties: Early Golden, Moorpark, Czar of Russia.

FRUIT LIST OF FOURTH DISTRICT.

By WM. MILLER, Member of Ad Interim Committee of above District.

RASPBERRIES.—Black, home use, two varieties: Gregg.

RASPBERRIES.—Black, market, two varieties: Gregg, Ohio.

RASPBERRIES.—Red and purple, home use, three varieties: Shaffer, Cuthbert.

GRAPES.—Home use, six varieties: Concord, Worden, Moore's Early, Niagara, Catawba, Delaware.

APPLES.—Summer, home use, three varieties: Early Harvest, Sweet Bough.

APPLES.—Summer, market, three varieties: Red Astrachan.

APPLES.—Autumn, home use, three varieties: Maiden Blush, Gravenstein.

APPLES.—Autumn, market, three varieties.—Maiden Blush, Duchess of Oldenburg, Ohio Nonpareil.

APPLES.—Winter, home use, six varieties: Canada Red, King, Grimes' Golden Gate or Belmont.

APPLES.—Winter, market, four varieties: Baldwin, Baltimore or Flushing Spitzenberg, Ben Davis.

PEARS.—Summer and fall, home use, six varieties: Madeline, Osband's Summer, Bartlett, Flemish Beauty, Tyson.

PEARS.—Summer and fall, market, four varieties: Bartlett, Duchess, Kieffer, White Doyenne.

PEARS.—Winter, home use, three varieties: Lawrence, Anjou.

PEARS.—Winter, market, three varieties: Anjou, Lawrence.

PEACHES.—Home use, six varieties: Late Crawford, Hill's Chili, Smock,

SAWY, Early Rivers, Mt. Rose, Early Crawford, Barnard, Elberta, Steven's Rareriye.

PEACHES.—Market, six varieties: Sawy, Elberta, Steven's Rareriye, Mt. Rose.

REMARKS.—Sawy ripens too late except on the lake.

PLUMS.—Market, six varieties: Geuij, Lombard, Diamond, Dean's Red, Niagara, Shipp's Pride, Reine Claude de Bay.

QUINCES.—Home use, two varieties: Orange.

QUINCES.—Market, two varieties: Orange.

CHERRIES.—Sour, market, three varieties: Montmorel.

APRICOTS.—Home use, three varieties: Early Golden, Harris, Mt. Gamet.

QUINCES.—Home use, two varieties: Orange.

CHERRIES.—Sour, home use, two varieties: Montmorel.

By W. N. SCARFF, Member of Ad Interim Committee of above District.

CHERRIES.—Sour, market, three varieties: Devon, Mont.

STRAWBERRIES.—Home use, three varieties: Haverland, Gr.

CHERRIES.—Sweet, home use, three varieties: Devon, Mont.

STRAWBERRIES.—Market, three varieties: Haverland, Gr.

RASPBERRIES.—Black, market, two varieties: Haverland, Gr.

RASPBERRIES.—Black, market, two varieties: Haverland, Gr.

APRICOTS.—Home use, three varieties: Early Golden, Harris, Mt. Gamet.

RASPBERRIES.—Red and purple, home use, three varieties: Haverland, Gr.

APRICOTS.—Market, three varieties: Early Golden, Harris, Mt. Gamet.

RASPBERRIES.—Red and purple, market, three varieties: Haverland, Gr.

Colossal, Hausel, Cuthbert.

CURRENTS.—Home use, three varieties: White Grape, Versailles, North Star.

CURRENTS.—Market, three varieties: White Grape, Versailles, North Star.

GOOSEBERRIES.—Home use, four varieties: Downing, Houghton, Red Jacket, Chautauque.

GOOSEBERRIES.—Market, four varieties: Downing, Houghton, Red Jacket, Chautauque.

RASPBERRIES.—Black, market, two varieties: Downing, Houghton, Red Jacket, Chautauque.

RASPBERRIES.—Red and purple, home use, two varieties: Downing, Houghton, Red Jacket, Chautauque.

BLACKBERRIES.—Market, two varieties: Snyder, Eldorado.

REMARKS.—Would plant Early Harvest both for market and home use.

APPLES.—Summer, home use, three varieties: Early Harvest, where hardy.

DEWBERRIES.—Home use, best variety: Lucretia.

DEWBERRIES.—Market, best variety: Lucretia.

GRAPES.—Home use, six varieties: Moore's, Early, Niagara, Brighton, Concord, Black.

GRAPES.—Market, four varieties: Moore's, Early, Niagara, Brighton.

APPLES.—Winter, home use, six varieties: Canada Red, King, Niagara.

APPLES.—Summer, home use, three varieties: Early Harvest, where hardy.

APPLES.—Winter, market, four varieties: Baldwin, Red, Golden, Rome.

APPLES.—Autumn, home use, three varieties: Early Harvest, where hardy.

APPLES.—Winter, home use, six varieties: Moore's, Early, Niagara, Brighton, Concord, Black.

APPLES.—Market, four varieties: Moore's, Early, Niagara, Brighton.

APPLES.—Winter, market, four varieties: Baldwin, Red, Golden, Rome.

PEARS.—Summer, home use, three varieties: Early Harvest, where hardy.

PEACHES—Summer and fall market, four varieties: Bartlett, Clapp's Favorite, Idaho.

PEACHES—Do not bear single home use, which are valuable here.

PLUMS—Home use, six varieties: Richland, Damson, Lombard, Niagara, German Prune, Burbank.

PLUMS—Market, six varieties: Lombard, Bradshaw, Reine Claude, Moore's Arctic, Shrop, Damson, Giqui.

QUINCES—Home use, two varieties: Orange and Meesh.

QUINCES—Market, two varieties: Orange and Meesh.

CHERRIES—Sour, home use, two varieties: Early Richmond, Montmorency.

CHERRIES—Sour, market, three varieties: Dyehouse, Montmorency, English Morello, Early Richmond.

CHERRIES—Sweet, home use, three varieties: Governor Wood, Yellow Spanish.

FRUIT LIST SIXTH DISTRICT.

By NELSON COX, Member of Ad Interim Committee of above District.

STRAWBERRIES—Home use, three varieties: Sharpless, Haverland, Heuerwood.

STRAWBERRIES—Market, three varieties: Haverland, Crescent, Warfield.

RASPBERRIES—Black, home use, one variety: Boulogne, Hindorn.

RASPBERRIES—Black, market, one variety: Boulogne, Hindorn.

RASPBERRIES—Red and purple, home use, three varieties: Cuthbert, Red and Purple, and one variety: Cuthbert.

CURRENTS—Home use, three varieties: Red Dutch, Virginia.

CURRENTS—Market, three varieties: Fay's Prolific, White Dutch.

GOOSEBERRIES—Home use, four varieties: Industry, Downing, Smith's Large.

GOOSEBERRIES—Market, four varieties: Industry, Downing, Smith's Large.

BLACKBERRIES—Home use, two varieties: Erie, Snyder.

BLACKBERRIES—Market, two varieties: Chimer, Eldorado.

GRAPES—Home use, three varieties: Concord, Hartford, Brighton, Salem.

GRAPES—Market, three varieties: Concord, Delaware, Early, Worden, Wyoming.

APPLES—Summer, home use, three varieties: Early Harvest, Early Chatter, and one variety: Early Harvest.

APPLES—Summer, market, three varieties: Yellow Transparent, Red, and one variety: Yellow Transparent.

APPLES—Autumn, home use, three varieties: Northern Spy, Fallwater.

APPLES—Autumn, market, three varieties: Golden, Fallwater, Fall Pippin.

APPLES—Winter, home use, six varieties: Jonathan, Roman Beauty, Roxbury Russet, and one variety: Jonathan.

APPLES—Winter, market, four varieties: Roman Beauty, Ben Davis, Smith Cider, Stark.

PEARS—Summer and fall, home use, six varieties: Bartlett, Clapp's Favorite, Tyson, Lawson, Wilder, Anjou.

PEARS.—Summer and fall, market, four varieties: Buffam, Clairgeau, Flemish Beauty, Howell.

PEARS.—Winter, home use, three varieties: Vicar, Winkfield, Lawrence.

PEARS.—Winter, market, three varieties: Lawrence, Vicar.

PEACHES.—Home use, six varieties: Crawford's Early, Crawford's Late, Early York, Schumaker, Wheatland, Yellow St. John.

PEACHES.—Market, six varieties: Beer's Smock, Globe, Heath, cling; Mountain Rose, Old Mixon, cling; Smock, free.

PLUMS.—Home use, six varieties: Pond's Seedling, Imperial Gage, Yellow Gage, Burbank, Wild Goose.

PLUMS.—Market, six varieties: Bradshaw, Lombard, Shipper's Pride, Abundance, Weaver.

CHERRIES.—Sour, home use, two varieties: Early May.

CHERRIES.—Sour, market, three varieties: Early May.

FRUIT LIST OF SEVENTH DISTRICT.

By E. M. WOODARD, Member of Ad Interim Committee of above District.

STRAWBERRIES.—Home use, three varieties: Bubach, Crescent, Wilson.

STRAWBERRIES.—Market, three varieties: Bubach, Warfield, Lovett.

RASPBERRIES.—Black, home use, two varieties: Gregg, Palmer.

RASPBERRIES.—Black, market, two varieties: Gregg, Kansas.

REMARKS.—Eureka promises well.

RASPBERRIES.—Red and purple, home use, three varieties: Cuthbert, Shaffer.

RASPBERRIES.—Red and purple, market, three varieties: Cuthbert.

REMARKS.—Miller and Columbia highly recommended; not fully tested.

CURRENTS.—Home use, three varieties: Fay, Victoria, White Dutch.

CURRENTS.—Market, three varieties: Cherry, Victoria.

GOOSEBERRIES.—Home use, four varieties: Industry, Houghton.

GOOSEBERRIES.—Market, four varieties: Industry, Downing.

REMARKS.—Crown Bob and Triumph worth testing.

BLACKBERRIES.—Home use, two varieties: Early Harvest, Taylor.

BLACKBERRIES.—Market, two varieties: Taylor, Snyder.

GRAPES.—Home use, six varieties: Worden, Concord, black; Delaware, Lindley, red; Niagara, Green Mountain.

GRAPES.—Market, four varieties: Concord, Niagara, Delaware, Worden.

APPLES.—Summer, home use, three varieties: Early Harvest, Red Astrachan.

APPLES.—Summer, market, three varieties: Red Astrachan, Sweet Bough.

APPLES.—Autumn, home use, three varieties: Autumn Strawberry, Maiden's Blush, Golden Sweet.

APPLES.—Autumn, market, three varieties: Autumn Strawberry, Maiden's Blush, Golden Sweet.

APPLES.—Winter, home use, six varieties: Grimes' Golden, R. I. Greening, Bailey's Sweet, Baldwin, Red Canada, Northern Spy.

APPLES.—Winter, market, four varieties: Baldwin, R. I. Greening, Northern Spy, Hubbardston.

PEARS.—Summer and fall, home use, six varieties: Bartlett, Clapp's Favorite, Tyson, Anjou, Seckel.

PEARS.—Summer and fall, market, four varieties: Bartlett, Flemish Beauty, Howell, Kieffer, Anjou.

PEARS.—Winter, home use, three varieties: Lawrence, Vicar, Winter Nelis.

PEARS.—Winter, market, three varieties: Lawrence.

PEACHES.—Home use, six varieties: Early Rivers, Yellow Rareripe, Crawford Early, Crawford Late, Scott's Nonpareil.

PEACHES.—Market, six varieties: Scott's Nonpareil, Crawford's Late, Marshall, Old Mixon, Beer's Smock, Stump the World.

PLUMS.—Home use, six varieties: Union Purple, Reine Claude, Imperial Gage, Lombard, Italian Prune, Bradshaw.

PLUMS.—Market, six varieties: Lombard, Damson, Shropshire, Italian Prune, Imperial Gage.

QUINCES.—Home use, two varieties: Champion, Orange.

QUINCES.—Market, two varieties.—Orange.

CHERRIES.—Sour, home use, two varieties: Black Tartarian, Early Richmond.

CHERRIES.—Sour, market, three varieties: Early Richmond, Yellow Spanish, English Morello.

CHERRIES.—Sweet, home use, three varieties: May Duke.

APRICOTS.—Home use, three varieties: Not tested in this vicinity.

FRUIT LIST OF THE EIGHTH DISTRICT.

By H. H. AULFATHER, Member of Ad Interim Committee of above District.

STRAWBERRIES.—Home use, three varieties: Crescent, Warfield, Gandy, Bederwood, Sharpless.

STRAWBERRIES.—Market, three varieties: Haverland, Sharpless, Gandy, Lovett, Barton's.

RASPBERRIES.—Black, home use, two varieties: Palmer, Hilborn, Eureka.

RASPBERRIES.—Black, market, two varieties: Palmer and Eureka or Gregg.

RASPBERRIES.—Red and purple, home use, three varieties: Cuthbert and Brandywine, red; Shaffer's Colossal, purple; Golden Queen, yellow.

RASPBERRIES.—Red and purple, market, three varieties: Cuthbert, red; Shaffer's Colossal, purple.

CURRENTS.—Home use, three varieties: Victoria, Fay and Red Dutch.

CURRENTS.—Market, three varieties: Victoria and Red Dutch.

GOOSEBERRIES.—Home use, four varieties: Downing, Houghton, Smith's Improved and Industry.

GOOSEBERRIES.—Market, four varieties: Downing, Houghton and Smith's Improved.

BLACKBERRIES.—Home use, two varieties: Snyder and Kittatany.

BLACKBERRIES.—Market, two varieties: Snyder and Taylor.

DEWBERRIES.—Home use, best variety: Lucretia.

DEWBERRIES.—Market, best variety: Lucretia.

GRAPES.—Home use, six varieties: Moore's Early, Concord, Brighton, Delaware, Agawan, Worden.

GRAPES.—Market, four varieties: Concord, Moore's Early, Niagara.

APPLES.—Summer, home use, three varieties: Yellow Transparent, Red Astrachan, Early Strawberry.

APPLES.—Summer, market, three varieties: Yellow Transparent, Red Astrachan, Early Pennock.

APPLES.—Autumn, home use, three varieties: Ohio Nonpareil, Fall Pippin, Maiden Blush, Orange Sweeting.

APPLES.—Autumn, market, three varieties: Maiden Blush, Ohio Nonpareil, Fall Queen.

APPLES.—Winter, home use, six varieties: Baldwin, G. Golden, R. I. Greening, Newton's Pippin, Belmont, Rambo.

APPLES.—Winter, market, four varieties: Baldwin, G. Golden, Wagner, York Imperial.

PEARS.—Summer and fall, home use, six varieties: Bartlett, Clapp's Favorite, Duchess, Flemish Beauty, Seckel, Sheldon.

PEARS.—Summer and fall, market, four varieties: Bartlett, Clapp's Favorite, Duchess and Kieffer.

PEARS.—Winter, home use, three varieties: Lawrence, Winter Nelis.

PEARS.—Winter, market, three varieties: Lawrence, Winter Nelis and Vicar of Wakefield.

PEACHES.—Home use, six varieties: Elberta, Crawford's Late, Smock, George the Fourth, Old Mixon, Stump.

PEACHES.—Market, six varieties: Elberta, Crawford's Late, Smock, Salway, Piquet's Late, Mt., Rose, Stump and Waterloo.

PLUMS.—Home use, six varieties: Bradshaw, Coe's Golden Drop, Green Gage, German Prune, Lombard, Reine Claude and Damson.

PLUMS.—Market, six varieties: Lombard, Coe's Golden Drop, German Prune, Gueii, Damson, Pond's Seedling.

QUINCES.—Home use, two varieties: Orange.

QUINCES.—Market, two varieties: Orange, Rea's Mammoth.

CHERRIES.—Sour, home use, two varieties: Early Richmond, English Morello.

CHERRIES.—Sour, market, three varieties: Early Richmond, English Morello, May Duke.

CHERRIES.—Sweet, home use, three varieties: Black Tartarian, Governor Wood, Napoleon, Bigareau.

CHERRIES.—Sweet, market, three varieties: Black Tartarian, Governor Wood, Napoleon, Bigareau.

APRICOTS.—Home use, three varieties: Early Golden, Moorpark, Peach.

APRICOTS.—Market, three varieties: Early Golden, Moorpark, Peach.

FRUIT LIST OF NINTH DISTRICT.

By S. R. MOORE, Member of Ad Interim Committee of above District.

STRAWBERRIES.—Home use, three varieties: Muskingum, Bubach No. 5, Haverland.

STRAWBERRIES.—Market, three varieties: Muskingum, Bubach No. 5, Haverland.

RASPBERRIES.—Black, home use, two varieties: Gregg.

RASPBERRIES.—Black, market, two varieties: Gregg.

RASPBERRIES.—Red and purple, home use, three varieties: Cuthbert, Caroline, yellow; Golden Queen.

RASPBERRIES.—Red and purple, market, three varieties: Cuthbert, Caroline, yellow; Golden Queen.

CURRANTS.—Home use, three varieties: Cherry.

CURRENTS.—Market, three varieties: Cherry.

BLACKBERRIES.—Home use, two varieties: Snyder, Lawton.

BLACKBERRIES.—Market, two varieties: Snyder, Lawton.

GRAPES.—Home use, six varieties: Moore's Early, Concord, Brighton, Worden, Lady Pocklington.

GRAPES.—Market, four varieties: Concord, Worden, Brighton.

APPLES.—Summer, home use, three varieties: Red Astrachan, Early Joe, dessert; Summer Sweet.

APPLES.—Summer, market, three varieties: Red Astrachan, Early Harvest, Tetofski.

APPLES.—Autumn, home use, three varieties: Benoni, Jeffries, Maiden Blush, Gravenstein, Porter.

APPLES.—Autumn, market, three varieties: Benoni, Jeffries, Maiden Blush, Gravenstein, Porter.

APPLES.—Winter, home use, six varieties: Northern Spy, G. Golden, Jonathan, P. W. Sweet, Fameuse or Snow, Hub. N. Such.

APPLES.—Winter, market, four varieties: Northern Spy, G. Golden, Jonathan, Ben Davis, Stark, Roman Beauty.

PEARS.—Summer and fall, home use, six varieties: Tyson, Bartlett, Seckel, Sheldon, Flemish Beauty.

PEARS.—Summer and fall, market, four varieties: Bartlett, Flemish Beauty, Kieffer, Sheldon.

PEACHES.—Home use, six varieties: Early Crawford, Late Crawford, O. M., free; Stump, Lemon, cling; Smock or Gudgeon.

PEACHES.—Market, six varieties: Early Crawford, Late Crawford, Stump, O. M., free; Lemon, cling; Smock, free.

QUINCES.—Home use, two varieties: Orange, Pear.

QUINCES.—Market, two varieties: Orange, Pear.

CHERRIES.—Sour, home use, two varieties: May Duke, Early Richmond, English Morello.

CHERRIES.—Sour, market, three varieties: May Duke, Early Richmond, English Morello.

CHERRIES.—Sweet, home use, three varieties: Black Tartarian, Elton, Governor Wood.

CHERRIES.—Sweet, market, three varieties: Black Tartarian, Elton, Governor Wood.

REMARKS.—In naming varieties it will be remembered that we have many that might be added to the list which are equally good and in some localities may be more abundant bearers. Plums, gooseberries and winter pears have not been much of a success in this section of Ohio, hence I omit naming any. Some of the new Russian cherries that we have on our trial grounds may supersede some of our native sorts. It will require several years' trial before we can speak of their merits. Some tree gooseberries, planted some eight years ago, have been partially remunerative, always bearing large fruit and have gone through all the late frosts, and we feel assured of their thorough hardiness, at our own place, where we have only a few plants on trial.

FRUIT LIST OF TENTH DISTRICT.

By FRANK FORD, Member of Ad Interim Committee of above District.

STRAWBERRIES.—Home use, three varieties: Timbrell, Eclipse, Dayton, Lovett.

STRAWBERRIES.—Market, three varieties: Crescent, Lovett, Eclipse, Enhance.

RASPBERRIES.—Black, home use, two varieties: Palmer, Hilborn.

RASPBERRIES.—Black, market, two varieties: Palmer, Gregg.

REMARKS.—We have no doubt but Eureka and Lotta are better than Hilborn; this is to be personal experience; we have not fruited these. The same in regard to Gregg, which is worthless on clay or other land not well drained.

RASPBERRIES.—Red and purple, home use, three varieties: Loudon, Cuthbert, Kenyon.

RASPBERRIES.—Red and purple, market, three varieties: Winant, Cuthbert, perhaps Loudon.

REMARKS.—Royal Church, Turner, Thompson's Early, Gladstone and Marlborough are all disqualified for market for one cause or another.

CURRENTS.—Home use, three varieties: Red Dutch, Cherry, White Grape.

CURRENTS.—Market, three varieties: Victoria, North Star, Versailles.

GOOSEBERRIES.—Home use, four varieties: Houghton, Pearl, Downing, Industry.

GOOSEBERRIES.—Market, four varieties: Houghton, Pearl, Downing.

BLACKBERRIES.—Home use, two varieties: Minnewaski, Western Triumph.

BLACKBERRIES.—Market, two varieties: Minnewaski, Erie.

REMARKS.—For quality, productiveness, hardiness these are not excelled. Eldorado may be better, but have not fruited it. We hope Eldorado will be better than Erie.

DEWBERRIES.—Home use, best variety: Don't know of any worth planting.

DEWBERRIES.—Market, best variety: If there are any that are of any value for market it is Lucretia.

GRAPES.—Home use, six varieties: Early Victor, Worden, Niagara, Ulster, Woodruff, Delaware.

GRAPES.—Market, four varieties: Concord, Niagara, Worden, Catawba where it will ripen.

APPLES.—Summer, home use, three varieties: Colton, Sops of Wine, Yellow Transparent.

APPLES.—Summer, market, three varieties: Colton, Duchess of Oldenburg, Red Astrachan.

APPLES.—Autumn, home use, three varieties: Maiden Blush, Gravenstein, Twenty Ounce or Cayuga Red Streak.

APPLES.—Autumn, market, three varieties: Maiden Blush, Gravenstein, Twenty Ounce or Red Bietigheimer.

APPLES.—Winter, home use, six varieties: Grimes' Golden, R. I. Greening, Wagner, Northern Spy, Baldwin, Roxbury Russett.

APPLES.—Winter, market, four varieties: Baldwin, Grimes' Golden Northern Spy, R. I. Greening.

PEARS.—summer and fall, home use, six varieties: Tyson, Bartlett, Seckel, Sheldon, Kieffer, Clapp's.

PEARS.—Summer and fall, market, four varieties: Bartlett, Kieffer, Boussouc, Anjou.

PEARS. Winter, home use, three varieties: Lawrence, Mt. Vernon, Bordeaux.

PEARS.—Winter, home use, three varieties: Lawrence, Bcurre Clarrgeau, Bordeaux.

PEACHES.—Home use, six varieties: Crosbey, Mountain Rose, Yellow St. John, Beer's Smock, Stump, Lemon, free.

PEACHES.—Market, six varieties: Crosbey, Beer's Smock, Mountain Rose, Stump, Lemon, free; Old Mixon, free.

PLUMS.—Home use, six varieties: Wild Goose, Lombard, Bradshaw, Burbank, Yellow Gage, Pond's Seedling.

PLUMS.—Market, six varieties: Lombard, Bradshaw, Wild Goose, Pond's Seedling, German Prune.

QUINCES.—Home use, two varieties: Orange, Meech's.

QUINCES.—Market, two varieties: Orange, Meech's.

REMARKS.—No quince has been found to take the place of the Orange. Champion blights badly. Pear and Mo. Mammoth are not productive. It is possible the Fuller may be found productive.

CHERRIES.—Sour, home use, two varieties: May Duke, Reine Hortense.

CHERRIES.—Sour, market, three varieties: Early Richmond, Montmorency, Reine Hortense.

CHERRIES.—Sweet, home use, three varieties: Black Tartarian, Black Eagle, Napoleon.

CHERRIES.—Sweet, market, three varieties: Napoleon, Elton, Rockport.

REMARKS.—Have had no experience in Apricot growing.

MISCELLANEOUS REMARKS.—In making this list I have had reference to varieties that have been well tested and those that have proved best for the purpose designated with me.

UNITED STATES DEPARTMENT OF AGRICULTURE.

DIVISION OF VEGETABLE PHYSIOLOGY AND PATHOLOGY, PACIFIC COAST LABORATORY.

SANTA ANA, CAL., *February 10, 1896.*

Dear Sir—The Bulletin relative to the treatment of Peach Leaf Curl, which is now being prepared, cannot be completed in time for distribution this spring. For this reason, and from the fact that many of the experiments conducted by growers in the East were incomplete in the spring of 1895, as peach leaf curl did not develop, it is much desired that those tests should be repeated the coming spring. To all those who are willing to assist in this work it is recommended that the experiments outlined for 1895 be carefully followed for 1896, with the following exception, viz., that the formula given below be used instead of "Formula IV," as given in the circular sent out in 1895. The formula to be substituted for "Formula IV" is as follows:

FORMULA V. (Modified Eau Celeste)—Dissolve 4 pounds of copper sulphate in 10 or 12 gallons of water, and stir in 5 pounds of washing or sal soda; then add 3 pints of 26 degree ammonia, and dilute to 45 gallons.

Hoping that you will be able to take part in the work this spring, and that you will carefully record and report the results upon the experiment sheets sent you a year since, I remain

Very sincerely yours,

NEWTON B. PIERCE,
Assistant Pathologist.

LIST OF MEMBERS

OF THE

OHIO STATE HORTICULTURAL SOCIETY.

Names.	Postoffice.	County.
Albaugh, N. H.	Tadmor	Miami.
Albaugh, B. F.	Covington	Miami.
Aldrich, O. W.	Columbus	Franklin.
Ames, Luther.	Weston	Wood.
Aultfather, H. H.	Minerva	Stark.
Allen, C. W.	Erie, Michigan	Monroe.
Ayres, J. C.	Eldorado	Preble.
Arthur, Mrs. K. A.	Zanesville	Muskingum.
Atwater, J.	Castalia	Erie.
Almack, J. W.	Coshocton	Coshocton.
Brown, Frank I.	Columbus	Franklin.
Berry, P. D.	Dayton	Montgomery.
Bunta, C. W.	Lima	Allen.
Bates, C. C.	Cuba	Clinton.
Beal, J. A.	Troy	Miami.
Bear, J. C.	Dayton	Montgomery.
Burtsfield, John.	Pattersonville	Carroll.
Barlow, A. & Son	Barnesville	Belmont.
Beattie, Johnson.	Zanesville	Muskingum.
Benton, H.	Savannah	Ashland.
Brainerd, B. H.	South Euclid	Cuyahoga.
Bredbeck, Wm	Danbury	Ottawa.
Bement, Samuel	Toledo	Lucas.
Bitzer, Michael	New Berlin	Stark.
Buechley, E. M.	Greenville	Darke.
Beaver, Jno. F.	Dayton	Montgomery.
Britton, J. H.	Painesville	Lake.
Broadhead, E. A.	Kittaning, Pennsylvania	Armstrong.
Borst, J. R.	Greentown	Stark.
Beebe, Geo. A.	Lakeside	Ottawa.
Baker, C. V.	Stoutsville	Fairfield.
Campbell, G. W.	Delaware	Delaware.
Crawford, M.	Cuyahoga Falls.	Summit.
Cushman, E. H.	Euclid	Cuyahoga.
Cox, Nelson	Ensee	Lawrence.
Claypole, E. W.	Akron	Summit.
Crofts, Thomas.	Toledo	Lucas.

Names.	Postoffice.	County.
Cooper, C. C.	Toledo	Lucas.
Cullar, Jonas.....	East Lewiston.....	Mahoning.
Clotts, Frank.	Gahanna	Franklin.
Cook, J. A.	Augusta.....	Carroll.
Codding, A. J.	Augusta, Illinois.....	
Cope, E.	Rogers.	Columbiana.
Cox, E. G.	Ensee.	Lawrence.
Crary, W. R.	South Kirtland.....	Lake.
Curry, F. M.	Minerva.....	Stark.
Dillie, W. H.	Euclid	Cuyahoga.
Dietz, Theo.....	Zanesville	Muskingum.
Deming Co.	Salem.	Columbiana.
Eaton, L. D.	Labelle	Lawrence.
Evill, F. B.	Kirtland	Lake.
Elliott, Albert.....	Defiance.....	Defiance.
Freeman, Isaac.....	Rex	Miami.
Farnsworth, W. W.....	Waterville	Lucas.
Farnsworth, W. G.....	Waterville.....	Lucas.
Fulweiler, Geo.....	Dayton	Montgomery.
Ford, Frank.....	Ravenna	Portage.
Fromm, J. J.	Dayton	Montgomery.
Faust, C. W.	Canton, Box 55.....	Stark.
Flory, J. A.	Wengerlawn	Montgomery.
Frease, F. L.	Okolona	Henry.
Glynn, J. W.	East Cleveland	Cuyahoga.
Green, W. J.	Wooster.....	Wayne.
Geib, Peter.....	1692 Lorain street, Cleveland....	Cuyahoga.
Garner, R. M.	Toledo	Lucas.
Gilbert, H. W.	Palmyra.....	Portage.
Gatton, Cyrus M.....	Bellville.....	Richland.
Green, J. F.	Sandusky	Sandusky.
Gault, W. G.	Ruggles.....	Ashland.
Harrison, J. J.	Painesville	Lake.
High, Geo. M.	Middle Bass.....	Ottawa.
Hunt, R. A.	Euclid	Cuyahoga.
Harris, W. C.	Toledo	Lucas.
Harmes, L.	Euclid	Cuyahoga.
Hartzler, P. J.	Weilersville	Wayne.
Hole, Clayton.....	New Berlin.....	Stark.
Hine, J.	Columbus	Franklin.
Hicks, Wm.	Toledo	Lucas.
Harrington, C.	Painesville	Lake.
Hale, Albert.....	Mogadore	Summit.
Holibaugh, H. A.	Marlborough	Stark.
Hathaway, A. F.	Cleveland	Cuyahoga.
Harvey, R. R.	Carrollton	Carroll.
Harrold, A. W.	Columbiana	Columbiana.
Hay, John	Canton	Stark.
Hetzler, Daniel.....	Gettysburg.....	Darke.
Hart, Isaac	Covington	Miami.
Hoover, Daniel.....	New Berlin.....	Stark.
Holl, J. B.	Rutland.....	Meigs.
Innis, G. S.	Columbus	Franklin.

Names.	Postoffice.	County.
Inlay, J. D.	Zanesville	Muskingum.
Johnson, T. S.	Gypsum	Ottawa.
Jenkins, J.	Winona	Columbiana.
Jenkins, E. W.	New Lebanon	Montgomery.
Knowlton, Levi	Utica	Licking.
Kramer, Wm.	Dayton	Montgomery.
Keime, George T.	Zanesville	Muskingum.
Krider, C. A.	Massillon	Stark.
Knellinger, Frank	South Kirtland	Lake.
Lauppa, Charles	Urbana	Champaign.
Lazenby, W. R.	Columbus	Franklin.
Lentz, D. H.	Piqua	Miami.
Livingston, A. W.	Columbus	Franklin.
Leonard, Ada M.	Piqua	Miami.
Leferer, W. G.	Mt. Gilead	Morrow.
Lawrence, G. W.	Canton	Stark.
Loop, A. J.	North East, Pennsylvania	
Long, F. P.	Okolona	Henry.
Lawrence, J. A.	Harlem Springs	Carroll.
Longanecker, Leander	East Lewistown	Mahoning.
Lowry, G. D.	Canton	Stark.
Myers, F. W.	Minerva	Stark.
Markel, John	Minerva	Stark.
Moorehead Bros.	Minerva	Stark.
McFarland, G. K.	Zanesville	Muskingum.
Miller, J. P.	Swanton	Fulton.
Miller, Henry	Hagerman	Darke.
Morningstar, J. H.	Greenville	Darke.
Miller, Wm.	Gypsum	Ottawa.
Moore, N. & Son	Toledo	Lucas.
McGregor, A.	Canton	Stark.
Maxwell, J. W.	Euclid	Cuyahoga.
Moore, Reuben	Piqua	Miami.
Moore, S. R.	Zanesville	Muskingum.
Montgomery, Cary W.	Newark	Licking.
McDowell, J. R.	Massillon	Stark.
Mayers, S. C.	North Vernon, Indiana	
McKee, John T. & Son	New Carlisle	Clark.
Miller, W. W.	Columbus	Franklin.
Miller, John A.	Osborn	Greene.
Mumma, A. M.	Dayton	Montgomery.
Mardis, J. F.	Lebanon	Warren.
Nye, Horace S.	Zanesville	Muskingum.
Newton, J. B.	Toledo	Lucas.
Niesz, J. K.	Maumee	Lucas.
Niesz, J. F.	Canton	Stark.
Ohmer, N.	Dayton	Montgomery.
Pierce, L. B.	Tallmadge	Summit.
Pfrimmer, Jacob	Milford	Clermont.
Pontius, A.	Canton	Stark.
Philpott, S. A.	McClure	Henry.
Petersime, J. M.	Webster	Darke.
Pray, J. L.	Whitehouse	Lucas.

Names.	Postoffice.	County.
Powel, S. A.	Rutland.	Meigs.
Perkins, W. E.	284 W. Pleasant St., Springfield.	Clark.
Palmer, P. J.	McDonaldsville.	Stark.
Ragan, Wm. H.	Greencastle, Indiana.	Putnam.
Roth, J. T.	Canton.	Stark.
Roudebush, Lowell.	Stonelick.	Clermont.
Rocksill, S. H.	Canton.	Stark.
Randall, C. H.	Willoughby.	Lake.
Ritter, F. W.	Dayton.	Montgomery.
Reeves, Mrs. J. E.	Loveland.	Clermont.
Slade, H. D.	East Cleveland.	Cuyahoga.
Sala Bros.	Minerva.	Stark.
Sutton, L. K.	Columbus.	Franklin.
Stoner, E. T.	Little York.	Montgomery.
Shinkle, G. W.	Hamersville.	Brown.
Stoppleman, Jno. H.	Dayton.	Montgomery.
Sweet, M. E.	Kirtland.	Lake.
Sterling, C. C.	Grand Rapids.	Wood.
Sweetland, C. B.	Zanesville.	Muskingum.
Selby, August D.	Wooster.	Wayne.
Scarff, W. N.	New Carlisle.	Clark.
South, A. Y.	Owensville.	Clermont.
Sanderson, Ninian.	Kamms.	
Snyder, J. J.	Paris.	Stark.
Storrs, Wm. G.	Painesville.	Lake.
Scarff, B. B.	Tippecanoe.	Miami.
Shelly, S. P.	Toledo.	Lucas.
Smith, Wm. H.	134 Garfield St., Dayton.	Montgomery.
Swigart, Henry.	Dean.	Montgomery.
Tyron, J. H.	Willoughby.	Lake.
Tracy, W. N.	Toledo.	Lucas.
Tussing, R. J.	Canal Winchester.	Franklin.
Teepie, A.	Akron.	Summit.
Tracy, T. B.	Euclid.	Cuyahoga.
Thornburg, Thos. E.	Ashland.	Ashland.
Towers, Thos.	Toledo.	Lucas.
Thompson, Wm.	New Carlisle.	Clark.
Tioll, John.	Brooklyn.	Cuyahoga.
Teeter, D. M.	Belleville.	Richland.
Van Deman, H. A.	Washington, D. C.	
Withoft, Fred. G.	Dayton.	Montgomery.
Warder, R. H.	North Bend.	Hamilton.
Woodward, D. K.	Lordstown.	Trumbull.
Waid, C. H.	Emery.	Fulton.
Woodward, E. M.	Kirtland.	Lake.
Whitney, C. L.	Warren.	Trumbull.
Wise, Watson.	Canton.	Stark.
Williams, Alex.	South Kirtland.	Lake.
Warner, E. M.	East Toledo.	Lucas.
Webster, F. M.	Wooster.	Wayne.
Wertz, W. H. H.	Dalton.	Wayne.
Wood, J. H.	Madison.	Lake.
Wheeler, W. A.	Perry.	Lake.

Names.	Postoffice.	County.
Withoft, J. M.	Dayton	Montgomery.
Wyckoff, Albert.	1910 E. Madison st., Baltimore, Md.	
Wheeler, W. J.	Melrose	Paulding.
Williams, A. E.	South Kirtland	Lake.
Walker, Hiram	Minerva	Stark.
Whitacre, F. L.	East Rochester	Columbiana.
Young, Henry	Ada	Hardin.
Yeslin C. F.	North Toledo	Lucas.
Young, T. Z	Canton	Stark.

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